

108
[H.A.S.C. No. 108-27]

Y 4.AR 5/2 A:
2003-2004/27

National Defense Authorization
ON

NATIONAL DEFENSE AUTHORIZATION ACT
FOR FISCAL YEAR 2005—H.R. 4200

AND

OVERSIGHT OF PREVIOUSLY AUTHORIZED
PROGRAMS

BEFORE THE

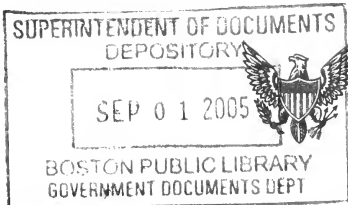
COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES
ONE HUNDRED EIGHTH CONGRESS

SECOND SESSION

PROJECTION FORCES SUBCOMMITTEE HEARINGS
ON

TITLE I—PROCUREMENT
TITLE II—RESEARCH, DEVELOPMENT,
TEST, AND EVALUATION
(H.R. 4200)

HEARINGS HELD
MARCH 3, 11, 17, 30, 2004



HEARINGS
ON
NATIONAL DEFENSE AUTHORIZATION ACT
FOR FISCAL YEAR 2005—H.R. 4200
AND
OVERSIGHT OF PREVIOUSLY AUTHORIZED
PROGRAMS
BEFORE THE
COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES
ONE HUNDRED EIGHTH CONGRESS
SECOND SESSION

PROJECTION FORCES SUBCOMMITTEE HEARINGS
ON
TITLE I—PROCUREMENT
TITLE II—RESEARCH, DEVELOPMENT,
TEST, AND EVALUATION
(H.R. 4200)

HEARINGS HELD
MARCH 3, 11, 17, 30, 2004



U.S. GOVERNMENT PRINTING OFFICE

WASHINGTON : 2005

20-128

PROJECTION FORCES SUBCOMMITTEE

ROSCOE BARTLETT, Maryland, *Chairman*

ROB SIMMONS, Connecticut

JO ANN DAVIS, Virginia

EDWARD SCHROCK, Virginia

JIM SAXTON, New Jersey

JOHN HOSTETTLER, Indiana

KEN CALVERT, California

JEB BRADLEY, New Hampshire

JOHN KLINE, Minnesota

GENE TAYLOR, Mississippi

NEIL ABERCROMBIE, Hawaii

ELLEN O. TAUSCHER, California

JAMES R. LANGEVIN, Rhode Island

STEVE ISRAEL, New York

JIM MARSHALL, Georgia

RODNEY ALEXANDER, Louisiana

ROBERT LAUTRUP, *Professional Staff Member*

JEAN D. REED, *Professional Staff Member*

JOHN SULLIVAN, *Professional Staff Member*

CLAIRE E. DUNNE, *Staff Assistant*

CONTENTS

CHRONOLOGICAL LIST OF HEARINGS

2004

	Page
HEARINGS:	
Wednesday, March 3, 2004, Fiscal Year 2005 National Defense Authorization Act—Department of Defense Conventional Long-Range Strike Capabilities .	1
Thursday, March 11, 2004, Fiscal Year 2005 National Defense Authorization Act—Navy Research and Development, Transformation and Future Navy Capabilities	139
Wednesday, March 17, 2004, Fiscal Year 2005 National Defense Authorization Act—United States Transportation Command's Airlift and Sealift Programs	213
Tuesday, March 30, 2004, Fiscal Year 2005 National Defense Authorization Act—Navy Force Structure and Ship Construction	297
APPENDIX:	
Wednesday, March 3, 2004	43
Thursday, March 11, 2004	177
Wednesday, March 17, 2004	239
Tuesday, March 30, 2004	345

WEDNESDAY, MARCH 3, 2004

FISCAL YEAR 2005 NATIONAL DEFENSE AUTHORIZATION ACT—DEPARTMENT OF DEFENSE CONVENTIONAL LONG-RANGE STRIKE CAPABILITIES

STATEMENTS PRESENTED BY MEMBERS OF CONGRESS

Bartlett, Hon. Roscoe, a Representative from Maryland, Chairman, Projection Forces Subcommittee	1
Taylor, Hon. Gene, a Representative from Mississippi, Ranking Member, Projection Forces Subcommittee	2

WITNESSES

Bolkcom, Christopher, Specialist in National Defense, Congressional Research Service	3
Cartwright, Lt. Gen. James E., USMC, Director of Force Structure, Resources and Assessment (J-8), Joint Chiefs of Staff	7
Fitzgerald, Rear Adm. Mark P., USN, Director, Air Warfare Staff, Chief of Naval Operations	12
Moseley, Gen. T. Michael, USAF, Vice Chief of Staff, United States Air Force	8
O'Rourke, Ronald, Specialist in National Defense, Congressional Research Service	5

APPENDIX

PREPARED STATEMENTS:	
Bartlett, Hon. Roscoe	47
Bolkcom, Christopher	87

	Page
PREPARED STATEMENTS—CONTINUED	
Cartwright, Lt. Gen. James E.	51
Fitzgerald, Rear Adm. Mark P.	71
Moseley, Gen. T. Michael	54
O'Rourke, Ronald	105
DOCUMENTS SUBMITTED FOR THE RECORD:	
[There were no Documents submitted.]	
QUESTIONS AND ANSWERS SUBMITTED FOR THE RECORD:	
Mr. Bartlett	125
Mrs. Davis (Jo Ann)	137
Mr. Hostettler	137

THURSDAY, MARCH 11, 2004

FISCAL YEAR 2005 NATIONAL DEFENSE AUTHORIZATION ACT—NAVY RESEARCH AND DEVELOPMENT, TRANSFORMATION AND FUTURE NAVY CAPABILITIES

STATEMENTS PRESENTED BY MEMBERS OF CONGRESS

Bartlett, Hon. Roscoe, a Representative from Maryland, Chairman, Projection Forces Subcommittee	139
Taylor, Hon. Gene, a Representative from Mississippi, Ranking Member, Projection Forces Subcommittee	140

WITNESSES

Young, Hon. John J. Jr., Assistant Secretary of the Navy (Research, Develop- ment and Acquisition); Vice Adm. John B. Nathman, United States Navy, Deputy Chief of Naval Operations (N-7) (Warfare Requirements and Pro- grams) Department of the Navy; Vice Adm. James C. Dawson, Jr., United States Navy, Deputy Chief of Naval Operations (N-8) (Resources, Require- ments, and Assessments) Department of the Navy; Lt. Gen. Edward Hanlon, Jr., United States Marine Corps, Commanding General, Marine Corps Combat Development Command; Rear Adm. Jay M. Cohen, United States Navy, Chief of Naval Research, Director, Test and Evaluation and Technology Requirements, Department of the Navy	141
---	-----

APPENDIX

PREPARED STATEMENTS:	
Bartlett, Hon. Roscoe	181
Young, Hon. John J. Jr., joint with Vice Adm. John B. Nathman, Vice Adm. James C. Dawson Jr., Lt. Gen. Edward Hanlon Jr., and Rear Adm. Jay M. Cohen	183
DOCUMENTS SUBMITTED FOR THE RECORD:	
[There were no Documents submitted.]	
QUESTIONS AND ANSWERS SUBMITTED FOR THE RECORD:	
Mr. Bartlett	203
Mr. Calvert	211

WEDNESDAY, MARCH 17, 2004

FISCAL YEAR 2005 NATIONAL DEFENSE AUTHORIZATION ACT— UNITED STATES TRANSPORTATION COMMAND'S AIRLIFT AND SEA- LIFT PROGRAMS

STATEMENTS PRESENTED BY MEMBERS OF CONGRESS

Bartlett, Hon. Roscoe, a Representative from Maryland, Chairman, Projection Forces Subcommittee	213
Taylor, Hon. Gene, a Representative from Mississippi, Ranking Member, Projection Forces Subcommittee	214

WITNESSES

Handy, Gen. John W., USAF, Commander, U.S. Transportation Command, United States Air Force	215
---	-----

APPENDIX

PREPARED STATEMENTS:	
Bartlett, Hon. Roscoe	243
Handy, Gen. John W.	247
DOCUMENTS SUBMITTED FOR THE RECORD:	
[There were no Documents submitted.]	
QUESTIONS AND ANSWERS SUBMITTED FOR THE RECORD:	
Mr. Abercrombie	296
Mr. Bartlett	289
Mrs. Davis (Jo Ann)	294
Mr. Saxton	296
Mr. Taylor	294

TUESDAY, MARCH 30, 2004

**FISCAL YEAR 2005 NATIONAL DEFENSE AUTHORIZATION ACT—NAVY
FORCE STRUCTURE AND SHIP CONSTRUCTION**

STATEMENTS PRESENTED BY MEMBERS OF CONGRESS

Bartlett, Hon. Roscoe, a Representative from Maryland, Chairman, Projection Forces Subcommittee	297
Taylor, Hon. Gene, a Representative from Mississippi, Ranking Member, Projection Forces Subcommittee	299

WITNESSES

Brown, Cynthia, President, American Shipbuilding Association	299
Young, Hon. John J. Jr., Assistant Secretary of the Navy (Research, Develop- ment and Acquisition); Vice Adm. John B. Nathman, United States Navy, Deputy Chief of Naval Operations (N-7) (Warfare Requirements and Pro- grams) Department of the Navy; Vice Adm. James C. Dawson, Jr., United States Navy, Deputy Chief of Naval Operations (N-8) (Resources, Require- ments and Assessments) Department of the Navy and Mr. Ronald O'Rourke, Specialist in National Defense, Congressional Research Service ...	311

APPENDIX

PREPARED STATEMENTS:	
Bartlett, Hon. Roscoe	349
Brown, Cynthia	356
O'Rourke, Ronald	377
Young, Hon. John J., Jr., joint with Vice Adm. John B. Nathman, and Vice Adm. James C. Dawson Jr.	368
DOCUMENTS SUBMITTED FOR THE RECORD:	
[There were no Documents submitted.]	
QUESTIONS AND ANSWERS SUBMITTED FOR THE RECORD:	
Mr. Bartlett	429
Mr. Taylor	456

H. R. 4200

To authorize appropriations for fiscal year 2005 for military activities of the Department of Defense, to prescribe military personnel strengths for fiscal year 2005, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

APRIL 22, 2004

MR. HUNTER (for himself and Mr. SKELTON) (both by request) introduced the following bill; which was referred to the Committee on Armed Services

A BILL

To authorize appropriations for fiscal year 2005 for military activities of the Department of Defense, to prescribe military personnel strengths for fiscal year 2005, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the “National Defense Authorization Act for Fiscal Year 2005”.

* * * * *

**DIVISION A—DEPARTMENT OF DEFENSE
AUTHORIZATIONS**

TITLE I—PROCUREMENT

Subtitle A—Authorization of Appropriations

SEC. 101. ARMY.

Funds are hereby authorized to be appropriated for fiscal year 2005 for procurement for the Army as follows:

- (1) For aircraft, \$2,658,241,000.
- (2) For missiles, \$1,398,321,000.
- (3) For weapons and tracked combat vehicles, \$1,639,695,000.
- (4) For ammunition, \$1,556,902,000.
- (5) For other procurement, \$4,240,896,000.

SEC. 102. NAVY AND MARINE CORPS.

(a) NAVY.—Funds are hereby authorized to be appropriated for fiscal year 2005 for procurement for the Navy as follows:

- (1) For aircraft, \$8,767,867,000.
- (2) For weapons, including missiles and torpedoes, \$2,101,529,000.
- (3) For shipbuilding and conversion, \$9,962,027,000.
- (4) For other procurement, \$4,834,278,000.

(b) MARINE CORPS.—Funds are hereby authorized to be appropriated for fiscal year 2005 for procurement for the Marine Corps in the amount of \$1,190,103,000.

(c) NAVY AND MARINE CORPS AMMUNITION.—Funds are hereby authorized to be appropriated for fiscal year 2005 for procurement of ammunition for the Navy and Marine Corps in the amount of \$858,640,000.

SEC. 103. AIR FORCE.

Funds are hereby authorized to be appropriated for fiscal year 2005 for procurement for the Air Force as follows:

- (1) For aircraft, \$13,163,174,000.
- (2) For missiles, \$4,718,313,000.
- (3) For procurement of ammunition, \$1,396,457,000.
- (4) For other procurement, \$13,283,557,000.

SEC. 104. DEFENSE-WIDE ACTIVITIES.

Funds are hereby authorized to be appropriated for fiscal year 2005 for Defense-wide procurement in the amount of \$2,883,302,000.

Subtitle B—Multiyear Procurement Authorization

SEC. 111. MULTIYEAR PROCUREMENT AUTHORITY FOR THE LIGHT WEIGHT 155 MILLIMETER HOWITZER PROGRAM.

The Secretary of the Navy may, in accordance with section 2306b of title 10, United States Code, enter into a multiyear contract, beginning with the fiscal year 2005 program year, for procurement of the light weight 155 millimeter howitzer.

TITLE II—RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

Subtitle A—Authorization of Appropriations

SEC. 201. AUTHORIZATION OF APPROPRIATIONS.

Funds are hereby authorized to be appropriated for fiscal year 2005 for the use of the Department of Defense for research, development, test, and evaluation, as follows:

- (1) For the Army, \$9,266,258,000.
- (2) For the Navy, \$16,346,391,000.
- (3) For the Air Force, \$21,114,667,000.
- (4) For Defense-wide activities, \$21,044,972,000, of which \$305,135,000 is authorized for the Director of Operational Test and Evaluation.

Subtitle B—Ballistic Missile Defense

SEC. 211. FUNDING FOR MISSILE DEFENSE AGENCY.

(a) Funds appropriated under the heading “Research, Development, Test and Evaluation, Defense-Wide” for the Missile Defense Agency may, upon approval by the Secretary of Defense, be used for the development and fielding of ballistic missile defense capabilities.

(b) This section shall be effective for fiscal years after Fiscal Year 2004.

* * * * *

FISCAL YEAR 2005 NATIONAL DEFENSE AUTHORIZATION ACT—DEPARTMENT OF DEFENSE CONVENTIONAL LONG-RANGE STRIKE CAPABILITIES

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROJECTION FORCES SUBCOMMITTEE,
Washington, DC, Wednesday, March 3, 2004.

The subcommittee met, pursuant to call, at 2:45 p.m., in room 2212, Rayburn House Office Building, Hon. Roscoe Bartlett (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. ROSCOE BARTLETT, A REPRESENTATIVE FROM MARYLAND, CHAIRMAN, PROJECTION FORCES SUBCOMMITTEE

Mr. BARTLETT. The subcommittee will come to order.

This afternoon we will receive testimony from the Congressional Research Service, the Joint Staff, the Air Force, and the Navy, on Department of Defense (DOD) long-range conventional strike capabilities.

While the United States enjoyed access to well-established military bases in Europe, the Persian Gulf, Northeast Asia and Southeast Asia during the Cold War, finding adequate forward bases from which to project forces with shorter ranges may be difficult to do in areas where threats are beginning to emerge.

In Operation Enduring Freedom in Afghanistan, the lack of regional bases limited the effectiveness of land-based tactical aircraft. As a result, Air Force long-range bombers and Navy and Marine Corps carrier-based aircraft dropped most of the bombs and conducted most of the combat sorties.

More recently, the inability to access, or fully access, bases in Turkey and Saudi Arabia complicated U.S. air operations in Operation Iraqi Freedom, making those forces capable of operating over long distances, or from sea bases, much more valuable.

Today's conventional long-range strike capabilities are formidable. They include 96 B-1, B-2, and B-52 combat-ready bombers, but our bomber forces are aging.

For example, the 44 combat-ready B-52s average over 40 years of age. Our long-range cruise missile inventory includes the conventional air-launched cruise missile, or CALCM, which is launched from the B-52, and the Tomahawk land attack missile (TLAM), which can be launched from Navy surface ships or submarines.

However, after firing over 800 TLAMs in Operation Iraqi Freedom, our TLAM inventories needed to be replenished.

Today's naval aviation aircraft force structure includes ten active, and one Reserve, Navy carrier air wings. It also includes three

active, and one Reserve, Marine air wings. Under the Navy-Marine Corps Tactical Air Integration Plan, the total number of primary authorized strike fighter aircraft in the Department of the Navy is being reduced from 872 down to 660.

While we will have less actual force structure in the future, the new F/A-18E/F Super Hornets and Joint Strike Fighters will certainly provide a more capable carrier air wing than the F-14s, and F-18As and Cs of today.

Similarly, the modifications to our bomber force, and new weapons such as the Joint Air-to-Surface Standoff Missile (JASSM) can provide improved long-range strike capabilities.

As we look across the menu of conventional long-range strike options in the Air Force and the Navy, the question becomes whether we are investing the right way to maintain and improve the Department of Defense's capabilities to conduct conventional strikes against distant targets in this era of limited and uncertain access to land bases.

To address these and other important issues, we have assembled a distinguished panel.

First, from the Congressional Research Service, Mr. Christopher Bolkcom, a specialist in national defense, who will help us understand aviation issues.

Second, also from the Congressional Research Service, Mr. Ron O'Rourke, a specialist in national defense, who will discuss naval issues.

Third, Lieutenant General James E. Cartwright, USMC, Director of Force Structure Resources and Requirements, J-8, Joint Chiefs of Staff.

Fourth, General T. Michael Moseley, USAF, Vice Chief of Staff, United States Air Force, and finally, Rear Admiral Mark Fitzgerald, USN, Director of the Air Warfare Staff, Office of the Chief of Naval Operations.

The chairman of our full committee, Mr. Hunter, hopes to be able to join us shortly. He is now testifying before the Budget Committee, making sure we are going to have adequate resources to meet your needs for the coming year.

Mr. Skelton may join us and when either Mr. Hunter or Mr. Skelton joins us, we will recognize them for any comments they choose to make.

Let me now call on my ranking member and friend, Mr. Taylor, for any remarks he would choose to make.

[The prepared statement of Mr. Bartlett can be found in the Appendix on page 47.]

STATEMENT OF HON. GENE TAYLOR, A REPRESENTATIVE FROM MISSISSIPPI, RANKING MEMBER, PROJECTION FORCES SUBCOMMITTEE

Mr. TAYLOR. Mr. Chairman, I would always be remiss if I did not mention how smart the people of Maryland were to have chosen you yesterday by a better than 70 percent margin. Congratulations.

And I want to thank our distinguished panel for being here. We welcome your thoughts and just want to hear what you have to say.

Mr. BARTLETT. Thank you very much.

Mr. Bolcom, the floor is yours, followed by Mr. O'Rourke, General Cartwright, General Moseley, and then Admiral Fitzgerald. Thank you very much.

STATEMENT OF CHRISTOPHER BOLCOM, SPECIALIST IN NATIONAL DEFENSE, CONGRESSIONAL RESEARCH SERVICE

Mr. BOLCOM. Thank you Mr. Chairman.

Mr. Chairman, distinguished members of the committee, thank you very much for inviting me to speak with you today about long-range conventional strike.

As requested, my testimony today will focus on long-range, theater-range aircraft, and support aircraft.

Today, I will address three questions that frame the debate on investments to maintain and improve DOD's long-range strike capabilities. These three questions are addressed at greater length in my written statement, which I have submitted for the record.

The first question pertains to air dominance: how many, and what kind of aircraft are required to achieve air dominance in an era of uncertain base access?

The Air Force's plan is to procure at least 278 F-22 Raptors and to maintain its B-2 fleet. The Air Force says that only these aircraft can survive tomorrow's biggest threat: SA-10, SA-12 and SA-20 surface-to-air missiles (SAMs).

F-22s and B-2s would destroy these SAMs, allowing other aircraft to fly in relative safety. F-22s would also defeat the enemy air forces, if they exist and if they dare to fight.

It does not appear that an aircraft, as advanced and as expensive as the Raptor, is required to address near-term air defense threats. This service is to have flown over 400,000 combat sorties since 1991 and have lost only 39 aircraft: a survival rate of 99.99 percent.

This does not consider the hundreds of thousands of support sorties, which have been flown without a single combat loss.

In a nutshell, U.S. air forces today operate with impunity. As for tomorrow, the threat that the Air Force projects, may or may not emerge.

Despite Russia's aggressive marketing over the past 20 years, they have sold SA-10 and SA-12s to only countries outside the old Soviet Bloc.

If less advanced and less expensive alternatives to the F/A-22 are to be explored, leading options may be unmanned aerial combat vehicles and the short take-off, vertical landing variant of the joint strike fighter (JSF), which would be less dependent on forward basing than the F-22.

The second question pertains to conventional long-range strike: how many and what kind of aircraft are required to conduct attacks against distant targets? In light of uncertain base access, DOD may wish to emphasize long-range bombers and Navy air carrier aircraft.

The Air Force currently operates 165 long-range bombers, but would prefer a smaller fleet. Thus far, Congress has resisted attempts to retire 18 B-52s and 33 B-1s. The Air Force plans to field a new bomber in the year 2037.

Bombers have played key roles in recent base-limited conflicts in both Iraq and Afghanistan; bombers flew a small number of combat sorties, but dropped the majority of air-delivered weapons.

Precision-guided munitions and improved targeting make bombers more versatile and more effective than they have been in the past, therefore, Air Force leaders argue, fewer bombers are required. Yet, the opposite argument can also be made. In light of their increased effectiveness, bombers are in greater demand.

The Navy and the Marine Corps have initiated a tactical air integration plan that will reduce the purchase of Super Hornets by 88 aircraft and the purchase of JSFs by 409 aircraft. These services hope that the smaller force will be as effective as the larger force because of increased readiness and modernization efforts.

Also, more Navy and Marine Corps units will be cross assigned to the other service. However, increased spending on readiness will likely defray the plan's projected procurement savings; potentially cutting it in half.

More closely integrating Navy and Marine Corps aircraft appears constructive; however, it is unknown whether this integration will increase combat power sufficiently to offset the loss of almost 500 aircraft.

It is noteworthy that in an era that may be dominated by long-distance conflicts with limited base access, both the Air Force and the Navy are pursuing plans to reduce the number of their long-range aircraft.

The third, and final, question pertains to support aircraft: how many and what kind are required? Perhaps the most prominent oversight regards aerial refueling and standoff radar jamming, because both of these can enable both air dominance and long-range strike.

It is currently unclear whether KC-767 will be fielded. Regardless, four other aerial refueling options can be considered.

These include re-engining the KC-135Es; converting surplus commercial aircraft into tankers; increasing the use of aerial refueling contract services and acquiring new tankers derived from commercial aircraft other than the 767s.

Despite considerable congressional scrutiny last year, a number of aerial refueling questions remain unanswered, such as the total DOD aerial refueling requirements and how quickly the KC-135Es must be replaced. And assessment of potential aerial refueling options requires that these questions be answered.

Today, stand-off radar jamming is performed by 120 Navy and Marine Corps EA-6B Prowlers. These aging aircraft also protect the Air Force, including its stealthy F-117s and B-2s.

The Navy plans to replace its Prowlers with 90 EA-18Gs, a variance of the Super Hornet. However, the EA-18G will be less common with the Super Hornet than originally planned and this divergence between the two aircraft may reduce this option's appeal.

The Air Force hopes to field a miniature air-launched decoy and to equip 12 B-52s over the set up to conduct stand-off radar jamming.

It may be that the Air Force would be better served by a stand-off jamming platform who could escort strike packages, which the B-52 can't do and is newer than the 40-year-old bomber.

Finally, Congress may wish to encourage its services to pursue joint approaches. The Marine Corps, for example, is studying a jamming version of the JSF, perhaps a joint program with the Air Force, and potentially the Navy, would have merit.

Mr. Chairman, this concludes my remarks. Thank you, again, for the opportunity to speak with you.

I welcome any questions you may have.

[The prepared statement of Mr. Bolkcom can be found in the Appendix on page 87.]

Mr. BARTLETT. Thank you very much.

Without objection, all of your prepared remarks will be included in the record and thank you very much for summarizing.

Mr. O'Rourke.

STATEMENT OF RONALD O'ROURKE, SPECIALIST IN NATIONAL DEFENSE, CONGRESSIONAL RESEARCH SERVICE

Mr. O'ROURKE. Mr. Chairman, distinguished members of the subcommittee, thank you for the opportunity to appear before you today. My testimony focuses on Navy surface combatants and attack submarines, which have three characteristics that can make them particularly suitable as long-range strike platforms.

First, they can operate in international waters, without need for access to in-theater land bases, which is significant in a time of limited and uncertain access to such bases.

Second, they can remain on station, ready to fire their weapons on short notice continuously for months at a time, which can be particularly useful in certain situations.

And third, attack submarines can remain on station without being detected, giving them the ability to conduct strikes without warning, which can be particularly valuable in attacking targets that can respond to such warnings by relocating or taking defensive measures.

The Navy's current weapon for conducting long-range strikes from surface combatants and submarines is the Tomahawk. The Tomahawk and the new tactical Tomahawk, or TACTOM, are very capable weapons.

There are three issues, however, concerning the Navy's reliance on the Tomahawk. The first concerns the Navy's inventory of Tomahawks, which was significantly reduced by the Iraq war.

Following the war, the committee characterized the Tomahawk inventory as being in severe shortfalls, relative to the Navy's required inventory level.

In response, Congress last year increased the fiscal year 2004 TACTOM procurement request from 267 missiles to 350.

In addition, this committee and the House Appropriations Committee indicated in report language, their support for procuring TACTOMs in fiscal year 2005 and future years at higher rates, so as to replenish the Tomahawk inventory more quickly.

The Navy's fiscal year 2005 request is for 293 TACTOMs, that is more than the 218 that the Navy projected for fiscal year 2005 in last year's plan, but it is 16 percent less than the 350 missiles that Congress funded last year.

The second issue regarding the Navy's reliance on the Tomahawk concerns its cost. The TACTOM's projected procurement cost of

about \$600,000 is roughly one-half the cost of earlier versions of the Tomahawk, but is still about 30 times the cost of an air-delivered Joint Direct Attack Munition (JDAM).

Given the relatively high cost of the TACTOM, compared to air-delivered precision weapons like the JDAM, surface combatants and attack submarines armed with Tomahawks may come to be viewed by U.S. military planners and DOD budget officials as less cost-effective platforms, relative to aircraft, for conducting long-range strikes than was once the case.

One way to restore the cost effectiveness of Navy surface combatants and attack submarines as long-range strike platforms, relative to aircraft, would be to supplement the Tomahawk with a long-range strike weapon that can be procured for a cost much closer to that of a JDAM.

One effort for developing such a weapon is the Affordable Weapon System (AWS), a low cost cruise missile supported by this committee. Navy officials have expressed some interest in the Affordable Weapon but Navy plans for procuring the weapon are unclear.

The third issue regarding the Navy's reliance on the Tomahawk concerns weapon speed. The Tomahawk and the Affordable Weapon are subsonic weapons that can take a long time to reach their target.

This raises the question of whether a high speed strike weapon should be acquired as a complement to the subsonic Tomahawk and Affordable Weapon.

A high speed weapon, such as a supersonic or hypersonic cruise missile would offer three potential advantages: an ability to attack very time sensitive targets; an ability to attack hardened or deeply buried targets; and, enhance weapon survivability against enemy defenses.

The Navy, over the last decade, has started or has tried to start several efforts to develop a high speed cruise missile or technologies for such a weapon.

To date, however, none of these efforts has led to a firm acquisition program for developing and procuring an operational high speed strike weapon.

Redressing the Tomahawk inventory shortfall, procuring a low cost supplement to the Tomahawk and acquiring a high speed strike weapon, could be particularly important for the Navy in three areas.

First, doing these things could enhance the cost effectiveness of the Navy's new Expeditionary Strike Groups, or ESGs, as independently deployable, strike capable platforms, which is what these formations are intended to be.

Second, doing these things could enhance the strike capabilities and consequently the justification for the Navy's DD(X) Destroyer Program.

And, third, redressing the Tomahawk inventory shortfall, procuring a low cost supplement to the Tomahawk and acquiring a high speed strike weapon could enhance the operational cost effectiveness of the Navy's Trident SSGN submarine.

Mr. Chairman, that completes my statement and I will be happy to respond to any questions.

[The prepared statement of Mr. O'Rourke can be found in the Appendix on page 105.]

Mr. BARTLETT. Thank you very much.

I am not sure that our air conditioning and heating system has anticipated the warm outside temperatures. It is perfectly all right with us, any of you who need to remove your coat, please do so. General Cartwright.

STATEMENT OF LT. GEN. JAMES E. CARTWRIGHT, USMC, DIRECTOR OF FORCE STRUCTURE, RESOURCES AND ASSESSMENT (J-8), JOINT CHIEFS OF STAFF

General CARTWRIGHT. Thank you, Mr. Chairman, Congressman Taylor, members of the committee. I would ask that this oral statement be submitted for the record.

I appreciate the opportunity to meet with you today to discuss the U.S. military's role in conventional long-range strike.

I would like first to thank you for the continued bipartisan support that you give to the men and women of our armed forces. That support is appreciated and is critical to operational success.

Today we remain ready to support the President's National Security Strategy to assure our allies, while we dissuade, deter and defeat any adversary.

Our challenge for the coming year and beyond is captured in three priorities: winning the war on terrorism, enhancing joint war fighting, and transforming for the future.

Our continued success in the area of conventional long-range strike is a vital component of each of these priorities and requires a well-integrated military, interagency and coalition effort which leverages the capabilities of our Naval Strike Groups, land-based long-range bombers, tactical strike aircraft, and their key enablers, the tanking, electronic warfare and surveillance aircraft.

To aid the Joint Requirements Oversight Council in determining warfighting needs with a capabilities-based approach, we are developing joint integrating concepts.

These concepts are far more focused than the functional and operating concepts, and define specific tasks to be conducted. They are designed to bridge the gap between how we want to fight and the capabilities we need.

Key to our discussion today is the Joint Integrating Concept for Global Strike.

To that end, US Strategic Command (STRATCOM) has reported significant progress in their new mission area of Global Strike, and they are on schedule to achieve full operational capability this year. Global Strike will enable us to hold at risk emerging target sets not limited to a deliberate plan, where timeliness is critical.

Looking into the future, we are drawing on analysis in many forms. With the support of this committee, studies like the alternative future fleet platform architectures, will examine traditional and alternate roles and missions, including long-range conventional strike and the impact of evolving technology on future forces.

In enhancing our conventional long-range strike capability, we seek to increase our persistence over the battlefield; our ability to range key targets in denied territory.

Our enhanced capabilities will also enable us to respond to commanders' needs in a timely fashion, achieving strategic and operational effects with lethal and non-lethal means.

In seeking these attributes, some of the future technologies we are pursuing with the services, National Aeronautics & Space Administration (NASA) and Defense Advanced Research Projects Agency (DARPA), include high-speed missile systems, hypersonics, high-speed turbines, advanced thermal protection systems for common aerial vehicles, and scram jet technologies and high temperature materials and low observables.

In short, the conventional long-range strike capabilities of today's military forces have demonstrated speed, flexibility and precision in Iraq and the ongoing global war on terrorism.

Maintaining our unchallenged military superiority requires investment to secure and ensure the current readiness of deployed forces while continuing to transform military capabilities for the future.

Thank you.

[The prepared statement of General Cartwright can be found in the Appendix on page 51.]

Mr. BARTLETT. Thank you very much.

General Moseley.

STATEMENT OF GEN. T. MICHAEL MOSELEY, USAF, VICE CHIEF OF STAFF, UNITED STATES AIR FORCE

General MOSELEY. Mr. Chairman, Congressman Taylor, distinguished members of the subcommittee, thank you for the opportunity to come before you this afternoon to discuss critical capabilities that the United States Air Force provides this nation in terms of current and future long-range strike.

This national capability must be defined as a capability to achieve the desired effects rapidly and/or persistently upon any targets set in any environment, anywhere, at any time.

More simply said, we must continue to be able to hold any enemy target set at risk at any point on the earth.

Today, the Air Force makes this capability to be responsive to multiple joint task force commanders around the world simultaneously as part of our Global Strike Concept of Operations (CONOP).

We understand that this mission requires lethality, survivability, supportability, flexibility and persistence and encompasses many more Air Force and joint systems than just bombers or theater-range combat aircraft.

Today, Mr. Chairman, your subcommittee is striving to answer the question, "How should funds be invested to maintain and improve the Department of Defense's capabilities for conducting conventional strikes against distant targets in an era of limited and uncertain access to land bases and overseas theaters of operations?"

Although the short answer is to approve full funding of the President's budget, the comprehensive answer that you really seek must detail current fleet capabilities in our plans for modernization, describe our near, mid-and long-term investment strategies and end

with plans a for realistic long-range strike capability that capitalizes on future technologies.

First, it is instructive to look back a bit at long-range strike and the significance of power projection. Throughout history, a nation's ability to project its power has been a necessary characteristic of all great powers since Athens and her powerful navy dominated the Peloponnesus. The United States has been no different.

Power projection for our great republic through air and space power has not only enabled other services but has enabled each of America's diplomatic, informational and economic instruments of power.

Supporting the national military and national security strategies by creating decisive effects, at points and times of our choosing, are capabilities that are demanded of U.S. airmen and have been since World War I.

As airmen, we have always understood the criticality of the power projection mission and the challenges associated with it. As a matter of fact, these same issues, these same questions, we are being asked by the House Committee on Military Affairs in the early 1930s whose stated jurisdiction included the conduct of joint operations of the Navy, the Army, Marine Corps, promotion of military aviation and army aeronautics.

In that time, budgets submitted by President Hoover and later, President Roosevelt, forced airmen to decide if they wanted to pursue two-or four-engine bombers, effectively they were at the same crossroads that we are at today.

They had to make tough choices relative to a strike force based on range, on payload, on persistence and survivability.

In 1933, in response to the Army's request for a large multi-engine bomber, the B-17, which was, at that time, the model 299 prototype financed by Boeing, went from design to flight test in less than 12 months. And by December 7, 1941, we had 347 in service.

The planes, along with the B-24 and, later, the B-29, could strike points throughout Europe, and would eventually strike points across the Pacific.

Mr. Chairman, times have changed a bit since then.

There is no longer the Committee on Military Affairs, corporations no longer fully finance their own aircraft, and long-range air power is a primary mission in the United States Air Force.

Earlier this year, we far surpassed the abilities that we demonstrated in World War II and in southeast Asia and also in Operation Enduring Freedom and Operation Iraqi Freedom, when we dropped 80 independently targeted 500-pound joint direct attack munitions, or JDAMs, off of a single B-2; each with a circular error average of less than the length of the bomb body; averaged 4.7 feet.

In essence, it is no longer an issue dependent totally on the number of aircraft available. Advances in targeting, weapon improvements and our net-centric focus has made each platform exponentially more effective.

What has not changed, however, is the requirement to be able to hold enemy targets at risk.

As the combined forces air component commander for Operation Enduring Freedom and Operation Iraqi Freedom, I was privileged

to command all air and space activities to the planning and execution of both of those campaigns.

I was charged with the responsibility of conducting multiple simultaneous flights in three separate operations inside Central Command's area of responsibility; most of these at great ranges.

We used B-1s, B-2s, B-52s, F-117s, F-15Es, F-14s, F-18s, AV-8s, A-10s, Air 15-Es, British Tornados, Australian Hornets, to deliver almost 30,000 weapons of which 70 percent were guided.

Although the B-1, B-2 and B-52 comprised only 5 percent of the Air Force's sorties they delivered 65 percent of the total weapons in Operation Iraqi Freedom.

To me, the platform mattered little. In fact the terminology "bomber" and "fighter" have blurred over time; we are really talking about a theater strike capability. And instead we focused on the desired effect to be brought to bear by both air and space power.

These long range assets, some of them flying the approximate distance from Tampa, Florida to Anchorage, Alaska plus our tankers, electronic warfare aircraft and other supporting assets, performed incredibly in every mission.

During Operation Enduring Freedom, the longest bomber mission in history was flown—42 hours from Missouri to targets in Afghanistan and back—perfectly illustrates the true global reach in power that proves that the Air Force can put force on target at any point on the planet.

Equally impressive, the longest fighter mission flown in the history of combat aviation was flown also against targets in Kabul and Afghanistan. That mission was 15.8 hours.

These are not capabilities lost on potential adversaries. Last year, armed with the terrific performance of all components in the past three years, the Air Force began an effort to aggressively move on long-range strike future.

First, at direction of the Secretary and the Chief, I opened the Long-Range Strike Summit in December of 2003, aiming at consolidating the finds of 24 ongoing studies they really weren't getting us anywhere closer to a capability.

Next, Secretary Roach and General Jumper announced that they would stand at two offices.

The first of these: the new, long-range strike office, led by Air Force Materiel Command, stood up on the 11th of February 04.

The second, an Air Force Air Combat Command-led study stood up an integrated planning team that began in operations in the last week in February.

These offices, both of them, are responsible for pre-milestone A activities, with regard to future long-range strike capabilities, specifically, we are asking them to develop an analysis of alternatives (AoA) to prepare the appropriate options for review by the Joint Requirements Oversight Council and to manage possible acquisition of a future long-range strike capability.

As we look at our way ahead from here, the plan is straightforward.

The 2005 budget requests almost \$600 million and more than \$3 billion over the Future Years Defense Program (FYDP) for various

upgrades and at improving the lethality, survivability, sustainability, persistence and flexibility of our legacy bomber fleets.

Our fleet of B-1, B-2 and B-52s are combat proven. Thanks to each of you, increased spare parts funding, your commitment to platform modernization in the fleet consolidations, have given us aircraft with record mission capable rates and a fleet that is more lethal and certainly more survivable.

Without question, we must maintain this fleet and its vital capability. However, we also know that the B-17, the B-24, the B-29, the B-36 and the B-47s cannot fly forever.

Today we are investing in future technologies that will enable long-range strike for 2025 and beyond. Relying on the formal AoA process, we will determine what form that long-range strike capability will take.

Additionally, this AoA will serve as the foundation that drives investments and supporting capabilities such as electronic warfare.

We must marry all of these investments to produce the synergistic and comprehensive long-range strike capabilities. From our requirements post to academia in the industry we have heard everything from B-2 alternatives and unmanned aerial vehicles (UAV) to hypersonic cruise vehicles.

Instead of committing to a single platform yet to be determined, we are investing in platform technologies that we will build on regardless of the AoA outcome.

In short, we are looking at a 2025 portfolio of options that includes manned and unmanned systems, air breathing and space systems and a wide mix of munitions connected to a network backbone of command and control that facilitates global strike at any target at any time.

While we are seriously committed to science and technology investments, we realize that we must continue to be responsive to numerous joint force commanders to provide de facto effects to any battlefield under any conditions.

To get from this legacy fleet of today to the long-range strike capability of the future, we believe there is a need for an intermediate capability, or bridge capability.

In some cases we will use advances in stand-off weapons and net-centric improvements to legacy bombers to maintain our global response and we are also looking at, perhaps, a different platform.

In practice, this will mean retaining some bombers that were slated for retirement, upgrading them from their current configuration to a fully capable fleet standard. In other cases, we may need to explore derivative platforms of existing systems that can fill the midterm gap or the bridge.

As General Jumper said before the entire committee last week, any option will certainly take advantage already done on the F/A-22, and for that matter, will take advantage of work done throughout the research community.

Again, the purpose of a long-range strike, or bomber, bridging capability is not to wait until the long return technologies mature, but rather to field midterm requirements.

Mr. Chairman, regardless of whether that bridge capability is a derivative aircraft or a set of continued modifications, there is no

doubt this committee can help maintain our long-range strike dominance by full funding 2005 requests.

Finally, Mr. Chairman, we are America's airmen. We take these platforms into combat, we send our brothers and sisters into combat in them, we live and die with the capabilities we are discussing here today.

Just as Congress and the Airmen of the 1930s did, we must continue to take a global view of this unique capability and we must always work together to fulfill America's national security strategy.

Mr. Chairman, I would like to introduce three of my babies that I brought with me today, who are combat-experienced bomber crewman.

Major Chris Bruner, B-1, weapons school graduate, weapons school instructor is sitting behind me. Major Stan Peter, B-52, weapons school graduate, instructor, combat veteran, and Lieutenant Colonel Chad Stevenson, B-2 weapons officer, combat experienced. And so we take this serious.

In that, sir, I want to thank you for holding this hearing today.

Thank you and Congressman Taylor for the opportunity to discuss this critical issue and I welcome the chance to answer any questions you or the committee may have.

Mr. Chairman, thank you.

[The prepared statement of General Moseley can be found in the Appendix on page 54.]

Mr. BARTLETT. Thank you very much.

The three that you mentioned, would you please stand so that we can appreciate you.

Thank you very much.

And now, Admiral Fitzgerald.

STATEMENT OF REAR ADM. MARK P. FITZGERALD, USN, DIRECTOR, AIR WARFARE STAFF, CHIEF OF NAVAL OPERATIONS

Admiral FITZGERALD. Thank you, Chairman Bartlett, Representative Taylor, distinguished members of the committee. It is great to be here today and it is a real honor representing the Navy-Marine Corps team.

We, the Navy-Marine Corps team, along with the Air Force are joint partners in long-range precision strike and we are working together to improve our future capabilities.

Long-range strike is an accepted fact in U.S. force projection today. And during the last three years, continuous operations ranging 500 to 800 miles over Afghanistan and Iraq, from a sea base, have demonstrated the persistence, the precision and the agility of our naval strike forces.

This committee knows that deep strike capability is key to national security and is vitally necessary to keep America's enemies far from our shores. And those enemies are aware that they can be attacked at any time and any location.

During Operation Enduring Freedom, I had the privilege of commanding the *Theodore Roosevelt* Battle Group and watching our Navy and Marine Corps long-range precision strike capability in action.

Our expeditionary strike force secured the sea lanes, while projecting power continuously over Afghanistan, 24 hours a day for over an 8 month period.

The joint force of U.S. Air Force bombers and tankers and Navy tactical aircraft allowed distributed reconnaissance, surveillance and fire power over the entire nation of Afghanistan.

Over 80 percent of our strike sorties launched not knowing where their target location was. And working with our SEALs and other special forces, under Joint Command and Control, they provided timely and accurate reconnaissance and firepower to turn the tide of battle.

Naval strike, electronic attack and surveillance aircraft and Tomahawk cruise missiles were pivotal in delivering precision weapons on target. Our Marine Expeditionary Force attacked 500 miles from their sea base to Rhino, their operating base in Afghanistan.

The *USS Kitty Hawk* acted as afloat forward staging base for the Army and Air Force special operations units.

The asymmetric advantage residing in sea basing, where a joint force does not have operational dependence upon fixed and vulnerable land bases offered the joint force commander increased freedom of action to deploy, employ and sustain his forces.

Operation Iraqi Freedom again proved why we have a Navy and Marine Corps: the value of sovereign naval platforms operating in the far reaches of this world, taking the fight to a distant and remote enemy to execute America's foreign policy.

Significant long-range strike support to Special Operations Forces (SOF) in Northern Iraq was provided from carrier strike groups in the Mediterranean when the Turkish bases were not available, while carriers in the Arabian Gulf provided deep strike and close-air support to our forces closing on Baghdad.

During Operation Iraqi Freedom we used the vast maneuver space of the sea to lift 94 percent of the joint force to theater.

We projected offensive combat power ashore with the deliver of Tomahawk cruise missiles over 2,700 tons of air-dropped munitions and the delivery of 60,000 combat-ready Marines to the fight.

All of this highlighted our ability to take credible, persistent combat power to the far corners of the earth, anywhere, anytime and without requirements for host nation approval.

The Navy and Marine Corps' continual success in providing long-range precision strike is the result of your investment and flexible, multi-role platforms with ever-improving capabilities.

The development of the long-range F/A-18 Super Hornet strike fighters and Tomahawk cruise missiles, coupled with the development of joint precise munitions, such as JDAM, the Joint Direct Attack Munition, and JSOW, the Joint Stand Off Weapon, have significantly increased lethality, accuracy and eight-point prosecution while reducing collateral damage.

Today's metric is targets per aircraft, vice the old metric of aircraft per target. We, with the enormous help from Congress, made good decisions that today are paying very great dividends.

Our focus is not on the successes of the past, though. In fact, we look forward to improving long-range strike capability and battlefield persistence in the future.

The increase in range, stealth and sensor capability of the Joint Strike Fighter, an unmanned air combat vehicle, will ensure the vitality and striking power of our future carrier battle groups, maintaining our tactical advantage over the enemy.

The foresight required to develop today's very successful sea-based, deep strike platforms has been well supported by this committee: CVN 21, DD(X), SSGN, Virginia-SSN, tactical Tomahawk and Joint Strike Fighter are all part of the Navy's vision for seabasing long-range strike capability far into the future.

The Navy is not only committed to pursuing the very best platforms for executing deep strike, it is also committed to using those assets in a transformational way that will provide the most firepower and impact on the enemy.

The Fleet Response Plan in our Navy-Marine Corps tactical integration plan has provided new, more efficient ways to employ our force.

When naval forces arrive, we are ready, we are immediately employable, we are by nature sovereign, we enable a joint force and we provide decisive firepower.

This unique combination of independence, mobility, lethality, precision and persistence is, I believe, critical to our 21st century joint force and to the viability of our national strategy.

The unprecedented level of joint operations, demonstrated everyday, makes our team: the Army, Navy, Air Force and Marine Corps a force without equal.

We thank you for your continued support for our Sailors and Marines on the tip of the spear. And I look forward to your questions.

[The prepared statement of Admiral Fitzgerald can be found in the Appendix on page 71.]

Mr. BARTLETT. Thank you all very much for your testimony.

As I was listening to your testimony, I noted that there are at least five ways of delivering weapons.

Collectively, representing our deep strike capability, they could be missiles—that is absent close by bases—one would be cruise missiles launched from bases many hundreds of miles away.

A second would be missiles launched from submarines—I think all of these were used in Operation Iraqi Freedom.

A third would be aircraft launched from our carriers, fourth would be our deep strike heavy bombers, some of them flying from as much as half a world away and fifth, guns and missiles from ships.

I am intrigued by the rationale that has been used in the past in determining the exact mix that we need to have.

And so, I am going to be listening during the questions and answers to see if I can better understand the rationale about how we got to where we are and how we are going to decide in the future what mix of these five capabilities that we need for meeting our future threat.

Let me now recognize my ranking member and friend, Mr. Taylor from Mississippi.

Mr. TAYLOR. Thank you, Mr. Chairman.

I thought Mr. Bolkcom, in particular, was interested on your comments on the Soviet SA-10s and-12s, I believe you said. What

threats are being generated around the world that you feel we need to respond to?

In addition to that, are the Russians the sole providers of this type of threat or is that fairly common technology being developed by other potential foes?

And by the way, do you see any of this making its way to the Iraq theater of operations?

Mr. BOLKCOM. Sir, in terms of long-range strike, I believe the surface-to-air missile threat is really the predominant threat we have to be careful of. The Russians certainly have been aggressive marketers of technology and we worry about their—

Mr. TAYLOR. If I may.

Mr. BOLKCOM. Sure.

Mr. TAYLOR. Are they equally aggressive developers of technology, or are these legacy programs from the end of the 1980s or early 1990s?

Mr. BOLKCOM. Right. Well, sir, I think most of them are legacy programs.

They have their roots in programs that were initiated a long time ago. And I think the big difference between the Soviet Union and Russia is now the Russians have to choose to limit more carefully what they tend to upgrade and produce in the future.

And an eye towards export is one of their biggest considerations, as their internal demand diminishes.

What I was going to say about the SA-10s, -12s and -20s what really makes them a concern is they are high altitude, they are long-range and their sophisticated radars and the fact that they are mobile, which makes them difficult to predict and track.

And I mentioned in my written statement a number of other commercially available networking technologies that may allow an adversary to disperse and network their systems in a very troublesome way.

So, I mention the Russians as really the worst case. I would also mention that a number of NATO countries, France, for instance, not to pick on them, but a number of NATO countries have very sophisticated industry and are capable of making and exporting quite good surface-to-air missile systems.

Mr. TAYLOR. Have you seen any evidence—I realize that we have been fortunate thus far in the Iraq conflict to have had minimal losses to enemy missiles—is there any evidence that you can see of that type of technology, or those type of weapons, making its way to the insurgents in Iraq?

And I am curious, when you talk about the SA-10s and -12s you mention their mobility. How affordable are they for a potential foe?

Mr. BOLKCOM. Sir, I don't have the exact estimate of their price off the top of my head.

It is easily researchable, but I would characterize them as real military systems and not the sort of system an insurgent or a non-stage actor could really operate because of all the associated training and support equipment and the like that is required.

What I see as the biggest, sort of, air defense threat would be the shoulder-fired threat, the man portable surface-to-air missile, which we have seen used to great effect and fast because they are cheap, highly proliferated, easy to hide and use.

The main limiting factor for them, of course is their altitude, typically flying above 15,000 feet denies them the ability to reach out and hurt you.

Mr. TAYLOR. If the insurgency in Iraq were to continue at its present level for another year—I would open up my question to the entire panel—as to what sort of missile threat does it pose a year from today for the larger aircraft operating in the theater: the 130s, the 17s?

Where do your prognostications—they have shown an ability to develop the Improvised Explosive Devices (IEDs) and apparently to refine that tactic—I am just curious if any of the panel's minds they have progressed to the next step, which is to rocket and missile attacks on our aircraft?

Mr. BOLKCOM. Well, I am really at the fringe of my expertise here talking about the proliferation and the like.

But again, I agree with you that we have seen a very resourceful adversary there and I think their resourcefulness will probably continue to focus on those things that are easily achievable for them.

I see the import of a high-altitude, long-range missile threat to be probably quite difficult. And so, my prognostication would be they would stick with those more easily acceptable, sort of, systems for the foreseeable future.

Mr. TAYLOR. I would like to open that up to the panel.

I think we have been fortunate to date and I would like to hear your thoughts on this as to whether or not that continues, or do you anticipate things getting tougher for the larger aircraft operating in that theater?

General MOSELEY. Congressman Taylor, let me take a stab at that for you. Since I commanded that operation, I have thought about this quite a bit.

The opportunity for the bigger systems, the strategic systems that we are talking about that are such a significant, revolving threat to all air activity in this long-range strike business: the bigger Soviet systems and some of the others produced by surrogates; I don't see as a imported threat into Iraq to be used by the opposition.

These are big systems with big vehicles and big radars and big canisters.

Prior to H hour, this time last year though, worried me a lot, because as a commander, there are times when you don't know what you don't know.

And so, the notion of these as being readily accessible on the market is a fact. The going price for the baseline entry into these new systems is about \$300 million for a battery. So, anyone with access to those sorts of resources can in fact, buy these things.

We watch this very carefully, but I was prepared to deal with this on H hour because we put a lot of people at risk, to include some of these guys behind me.

But to make the leap that the opposition would have access to these sorts of systems in Iraq; Sir, I am not willing to go that far.

What I would tell you though, is there is a variety of man-held systems, shoulder-fired systems that are out there. We see that being shot at us quite a bit.

Some of the older ones, some of the more recent ones, but the Army and the Marines also have adapted with rotary wing tactics that are much improved. We are also looking at a variety in families in systems of systems for decoys for countermeasures.

This is a technology game, as much as it is an interactive game with people trying to hurt you. So, pods, various forms of jammers, various forms of countermeasures are also in the mix.

And so, over the next year, I will tell you, there is no guarantee we are not going to get airplanes hit by these things and there is no guarantee that they won't attempt to find newer systems, but we are on top of this and working this hard: Marines and Navy and Army and Air Force aviation.

But sir, I would also add with our coalition partners to include the British and others that are flying airplanes inside that country, to include also Afghanistan. Because the opposition are fairly creative and they have access to some interesting technologies.

So, I don't know if I have made you feel better, but that is an honest answer from a fighter pilot who commanded the operation.

Mr. TAYLOR. Well thank you. Would anyone else care to enlighten me on that?

General CARTWRIGHT. I might just catch another part of the envelope, just to be holistic here and while the large canister weapons—I am absolutely in agreement with General Moseley—what we have seen though is the vulnerability of these large aircraft as they get closer to the ground. Same is true for the helicopters.

The shoulder-fired weapons are increasing in sophistication, but even probably more problematic for us is that the way they are being used: the teaming efforts, the so-called herding and channeling of predictable flight paths, particularly around airports or landing areas.

They have gotten considerably smarter in how they use the weapons that they have; whether they be the old SA-7 shoulder, or the newer variants, or teaming those in combination with ground fires.

And they have taken to their own net-centric approach of being able to communicate and use older legacy weapons to hold newer platforms at risk, even with our upgrades to protection capabilities.

So, there is a combination of the platform's capabilities of our defensive measures and of our own tactics, techniques and procedures that have to be put together here and one solution only lasts for a few weeks and then you have to move on, because if you get predictable, they also get very high in their confidence and their ability to do something.

And so, I think there is an accurate portrayal here of the long-range highly maneuverable missiles that likely are not going to show up in the theater again.

But there is also the threat of the less sophisticated weapons and their ability against large aircraft in particular and long range aircraft as they get into vulnerable flight regimes, particularly around landing and take off.

Admiral FITZGERALD. Congressman Taylor, let me add to that also. There is an opportunity here to explain tactics, techniques and procedures. We have had three big airplanes hit with missiles.

Mr. TAYLOR. That is ours, no? You would not be including, what is it, the commercial carrier was a D-8?

Admiral FITZGERALD. That was the first one.

Mr. TAYLOR. That is one of the three. Okay.

Admiral FITZGERALD. We have had a C-5 and a C-17 hit.

The answer to this, to get at what General Cartwright is talking about is a cordon of safety out to X kilometers around the landing surface, also to include the descent and offset quarters for takeoff and landing.

And that is what the surface, whether they are Army or Marine folks are doing for us right now, before we bring an airplane into a location the surface commander supports that operation with being able to secure the periphery of the airfield, as well as the arrival and departure corridors for the airplane, because you have to descend to land and ascend to take off.

We also have rotary wing assets and unmanned aerial vehicles that are also in the vicinity of these airfields, and also the artillery radars that are looking for various objects that fly and being able to put sensors on this.

So, Congressman Taylor, there is no free lunch in any of this and warfare is an interactive game and your opponent gets to shoot. And so, the ability to stay ahead of his evolution and tactics and his evolution and lethality is what we are about here.

And to be able to put sensors and pods and countermeasures on the airplanes and be able to work this real-time is the challenge.

And sir, while I have the mike, let me also talk about the fixed-wing threats that you alluded to.

The Russians and Russian companies—we are into the fourth generation of the Sukhoi SU-27. There is an SU-27, an SU-30, SU-37 and an SU-47.

Those aircraft, and versions of those aircraft, are being co-produced by people outside the Soviet Union. There is a wide proliferation—

Mr. TAYLOR. Such as?

Admiral FITZGERALD. China.

Mr. TAYLOR. Okay. Thank you.

Admiral FITZGERALD [continuing]. There are multiple users of those types of aircraft outside what used to be the Soviet Union, to include the MIG-series fighters.

We also have on the market now some very sophisticated aircraft that come out of Europe: the Euro fighter and the Rafael and some of the other aircraft that present threats. So, the notion of survivability in this long-range strike business is to be able to survive not only, an emerging and very, very lethal airborne threat, but also the surface-to-air missile threat.

And these new aircraft have incredibly capable radars with incredibly lethal missiles onboard. And you have heard our chief say several times that our pilots flying their airplanes beat our pilots flying our airplanes every time.

So, there is a threat out there and it is a threat to survivability of these long-range assets.

Mr. TAYLOR. Thank you, sir.

Thank you, Mr. Chairman.

Mr. BARTLETT. Thank you very much, Mr. Taylor.

Our full committee chair has now joined us. He just came from testifying before the Budget Committee.

And please know Mr. Chairman, that while you were there defending our budget, our prayers were with you.

Thank you very much for joining us and now if you would like to make any remarks or comments, ask any questions you wish.

The CHAIRMAN. Well, thanks a lot, Mr. Chairman. Appreciate you letting me come in and participate here.

Yes, they rolled over and want to give us an extra \$50 billion, but they said, "Only in your subcommittee, Roscoe."

I look at the successes that we have had with Precision Strike over the last couple of campaigns and the one thing that worries me is the idea of a challenge in the future that would require lots of persistence, where the targets don't all go down easily, where the targets can be renewed—and I am thinking of places like the artillery caves in North Korea and other locations—and we find out that in the end, coverage did matter and numbers did matter.

We got 21 B-2s, got just a handful of B-1s and we are kind of arm wrestling over whether we can get a measly 23 more than you are taking out of service, back into the ranks, and we have the ancient B-52.

So, I want to ask Mr. O'Rourke, because I know he puts pen to paper on these issues quite a bit.

Mr. O'Rourke, looking at the overall U.S. strike picture with long-range aircraft and the possibility of having to move or work with the conflict in the area of China, North Korea, in that type of an Area of Operations (A.O.)

Do you think we have the numbers to provide a persistent strike capability that can attend a more lengthy conflict than what we have had in the past? What do you see?

Mr. O'ROURKE. Mr. Chairman, I am going to give you half of the answer and then I am going to defer to my colleague, Christopher Bolcom for the other half.

I am here to talk about Navy surface combatants and attack submarines and they offer a potential for being on station persistently for weeks or months at a time, even without access to in-theater land bases.

So, they have the first half of the persistence equation down, which is, they can be there for a long time without having to return to base.

And that is the characteristic that distinguishes them from aircraft, whose on station persistence at weapon launch locations is measured usually in hours rather than in days or weeks or months.

The question for the persistence of attack from surface ships and attack submarines is not so much related to the platform, because they can be there; that is a lot of the reason why we buy a navy.

It has to do more with the weapon. Right now, we have a limited number of Tomahawks, so if we were to shoot them persistently over time, they would work well until we ran out of them.

And the other question is, especially in regard to what you mentioned with targets popping back up after we attack them is that the Tomahawk is a fairly expensive weapon and you don't necessarily want to use a fairly expensive weapon to go persistently

after a target set that can regenerate itself over short periods of time.

You would, perhaps, want to have a less-expensive weapon take those targets out if they could. And that is what the Affordable Weapon, I think, in part, would have great value.

It would allow these platforms, which can remain persistently in-theater to conduct attacks persistently against targets at a much lower cost than what surface combatants and attack submarines can do right now with the much more expensive Tomahawk.

And for the second half of the answer relating to aircraft, I will turn that over to Chris.

Mr. BOLKCOM. Thank you, Mr. Chairman.

In the many milieus of warfare, mass really matters. I think, we pride ourselves on our quality, but numbers really count. And great distances oftentimes make it difficult to apply great mass.

A couple points: it has been difficult in the past to generate lots of sorties from the United States to distant theaters.

I think the reduction in the size of weapons and the ability to use GPS (Global Positioning System) and other targeting capabilities has really changed that equation. We still have to fly long distances, but as was mentioned, drop 80 bombs and in the future 320 for aircraft.

So, I see that as a very positive improvement.

And the point I will also make is that we are fighting an away game and the war starts when we get there.

So, just like Afghanistan, we built up, we prepared, and even though bases were limited, we got what we needed in-theater and we did the job. And many people said that Saddam Hussein would never allow us to build up over a six-month period and attack him again. Well, in fact, he did.

So, I think we have to bear that in mind when we think about great distances is not every conflict will leave you prosecuted immediately and on the hair trigger.

The CHAIRMAN. Okay.

General Moseley, any ideas here?

General MOSELEY. Mr. Chairman, I do. Let me add to that. I don't disagree with anything that has been said. Let me make a couple of points.

When we spun up for Afghanistan and Iraq I heard a lot of people say we were going to have issues with access and basing. The fact of the matter is, we operated out of 50 bases within a region.

At any one time we operated at a 36 of 38 and for the Iraqi phase, we operated at 36 bases plus the five battle groups afloat.

I was blessed to have opportunities afloat and ashore. I was blessed to have multiple opportunities relative to range and payload. Whether they are F-14s, F-18s, Harriers, et cetera.

The challenge that you just described is effectively still one of range, of payload, of persistence and of survivability. And the weapon against the relative target is still one of blast effect and desired effect.

Do I have to penetrate granite to get to it? Is it an emerging target that I don't know exists until I know it?

Is it a fleeting target; is it a time-critical target; is it fixed? All of those have to be dealt with at the same time.

And the penetrating characteristics take us to a class of weapon that perhaps, is not Tomahawk Land-Attack Missile (TLAM)-capable or Conventional Air Launched Cruise Missile (CALCM)-capable, but perhaps is a gravity weapon depending on my structure and we have weapons to do that. And we carry those on fixed-wing platforms.

So, Mr. Chairman, I would say it is all of that. It is an ability to operate from expeditionary airfields; it is ability to operate from afloat; from bases in the Continental United States or within the theater.

But it is still an issue of range and payload and persistence and survivability.

The CHAIRMAN. Okay. But in the end, you have to reload those bombers, you have to reload those strike boats, whether they are sub platforms or surface platforms.

In the old days, we could turn these bombs out hundreds at a time out of a given factory. Today, it takes a long time to make a bomb.

So, I was looking at a conflict that could take some time, where you had targets that could take a lot of pounding. I think we have the ability to put a high quality strike for a limited period of time, until we run out of ammo, on almost any target in the world.

But my worries are that in a fight where the other guy can take a lot of hits and keep coming out of holes and keep shooting, we don't have an industrial base that can, within a few months, resupply an expended force.

Does that worry you at all?

General MOSELEY. Sir, it worries me. I will tell you as the Vice Chief of Staff of the Air Force, I am not sure I could do much about the industrial base, but I will take what we are able to do with the tools that we are given: we are able to crossdeck without Navy and Marine brothers, bombed bodies and kits and laser heads, depending on their requirement.

We have moved hundreds of weapons from ashore to afloat to compensate for expenditures; we have moved from afloat to ashore to compensate for potential expenditures.

And in the spin up for Iraqi Freedom, the only issue I have was an laser-guided bomb (LGB) was in guided bomb unit 12 (GBU12), which is the 500 pound-class weapon and we were able to take those stocks out of Navy systems and able to work that between the services.

I don't know whether I can answer your question about industrial base, but I do think we have a pretty good idea of how to deal with what we have in the inventories, have it on the right airplane.

Doesn't matter whether it says U.S. Marine Corps, U.S. Navy, U.S. Air Force on the side of it and drop it on the right target.

The CHAIRMAN. Okay.

Thank you, Mr. Chairman.

Mr. BARTLETT. Mr. Chairman, you added a new dimension to an observation I made at the very beginning of our questioning.

I noted that we had five different capabilities for delivering weapons, minus nearby bases. They were land bases, hundreds and hundreds of miles away from which we could launch cruise missiles.

There were submarines, which could pop up and launch cruise missiles. They were carriers just off-shore, from which we could launch aircraft and their weapons.

They were deep strike bombers that could attack on as much as half a world away and there were ships, surface platforms, with both guns and missiles.

And my question was, "How did we arrive at the quantity of each one of these in this mix?", because any one of them, with the last enemy, would have probably been adequate.

You have added now a new dimension to it, that is, "How do we decide how much of each of the weapons we need?" And how do we do that, sir?

The CHAIRMAN. I think you have to look at a—and I know we do this in our war game and you got to look at a war game and you got to figure out how long the bad guy stands up you had a conflict in China and Korea and how long he continues to put new targets up. And at some point, you run out.

So, I think what you do is look at your mix of sea-based stuff. Also look at your mix of deep-based stuff. And that means your long-range bombers and just try to make sure you put enough explosives on target.

The one thing I am worried about, Roscoe, is that you have these huge distances that you have to cross now to get deep stuff into a Chinese or Korean theater.

So, you have the equivalent of a long, long logistical line, if you will, that you historically, could compare it to the German Army trying to get to Moscow and stretch out its logistical line until it was vulnerable.

So, you got a long, long distance you got to cross and now you have a very small number of platforms that are available to do this.

And, in the end, if you run out of bullets, you can't replenish that bullet supply quickly, which we could in the old days. In the old days, our factories could turn on, bullets were a lot simpler then, you could make them.

And so, that was my concern with the number of platforms. I think we have high quality attack capability, but whether or not we could service, for example, some shootdowns, some attacks.

Hell, we had attacks in World War II where we took greater losses than the entire B-2 force in a matter of hours. Right? General?

General CARTWRIGHT. Yes, sir.

The CHAIRMAN. And yet we had to keep on fighting and we had to keep on slugging.

We are now down to a very small number of platforms that doesn't give us much margin for surprise, for surprising losses or surprisingly tough targets. That is what I am concerned about.

I guess, Roscoe, What I was trying to do, too, was kind of get to the bomber part of this equation and that you don't have many bombers now.

We got a ton of money on the board for fighter aircraft. You got a few MIG types that can take us on in various aspects; you don't have very large air forces. And yet, you do have an increasingly sophisticated surface-to-air missile capability springing up.

And I think we are going to need some more bombers. You have an old, old bomber force and not a dime budgeted for bombing.

General MOSELEY. Sir, could I answer that?

The CHAIRMAN. Absolutely. If you got a new bomber, I want to hear about it, General.

General MOSELEY. Sir, you and I have had this discussion before.

The CHAIRMAN. Well, you see, Roscoe pulled this out of me here. I was reluctant to bring it up, but he did a good job.

General MOSELEY. Let me take each one of the bombers: the B-1—in 2005 alone we have about \$87 million into that airplane and over the FYDP, we have \$632 million in the B-1.

And I can't talk about that at any detail or I can provide those to Mr. Sullivan on each of those programs—

The CHAIRMAN. No, we know you are putting money into existing old planes. We know that. And we keep upgrading them.

General MOSELEY. But there are levels of efforts thrust into the B-2, it is \$1.8 billion over the FYDP. And then, each of these, we have to get the systems capable enough for the current threat.

Our plan, as we discussed before with Mr. Sullivan, is to make the B-2s as relevant as we can with all the command and control assets to get the B-1s to the right number and get them into Block Echo status, which is the highest capability we can get with the airplanes.

Get the B-52s into that same mold with pods on them, so we can use to drop either laser-or satellite-guided weapons.

And, look at turning a number of them into standoff jammers, which we need for Marines, for Naval Aviation, for ourselves and for surface commanders.

We have stood up the office at Air Combat Command to look at alternatives for a bridge bomber. We have stood up an office at Wright-Patt to look at the long-range strike options of the future.

Looking at a 2025 option on a new platform; we are looking at our portfolio of capabilities to include munitions, sensors, the enablers, command and control, intelligence, surveillance, and reconnaissance (ISR), electronic warfare and we are concluding that there is a requirement for a bridge capability to get us from where we are with existing airplanes out to that period.

Now, is that a derivative of an F/A-22, is it an F/B-22; Mr. Chairman, that is what we are looking at right now. And, do we have the numbers of that, we do not.

We are going through the studies now to see a derivative platform of some kind: how many would it be and how long would it take to get it?

And then, how will that bridge us out into something that may be atmospheric, exo-atmospheric, hypersonic, or a synergy of space and orbital systems?

So, Mr. Chairman, I am agreeing with you.

We are working our way to that and we are putting money into the B-1 and B-52 and B-2 fleet. We are looking at a bridge capability, and we are looking at what lives out beyond 2025.

We had 24 ongoing studies that we stopped in December, after we talked in November, and rolled into those two offices, one at Air Combat Command for Requirements, and one at Air Force Materiel Command at Wright-Patterson AFB, to do this very thing.

The CHAIRMAN. Well, thank you, General.

And Mr. Chairman, I want to apologize to my colleagues, Mr. Taylor and Mr. Marshall and Mr. Kline: if they haven't had sufficient time to ask questions. I didn't mean to hog all the time in here.

Mr. BARTLETT. Relative to your questions, you raise a very important issue here. We in Congress, particularly this committee, feel that we need more bombers and we have put in legislation that you have not asked for, you have not asked for it, to bring some of our bombers out of retirement and you are kind of resisting that.

Mr. Chairman, we need some sort of a structured approach where we can determine the right mix of these platforms: the five different ways.

I mentioned delivering these weapons; we now have a difference of opinion with our services as to the role that bombers ought to play and they are sitting there. Ought to be a structured process that we all can agree to that would lead us to an arbitration that we could live with.

I would like to go down to our witnesses and just ask them if they aren't comfortable that we now have, in our inventory, enough weapons to meet the kind of a potential threat that you addressed.

And I would just like to have them go on the record, very briefly, just start with Mr. Bolocom and go down the line, "Are you now comfortable that we have enough Tomahawks and all of the other weapons that we have used and will need to use in the future?"

Mr. BOLCOM. I am going to have to fudge just a little bit, Sir, and tell you I think that the military is very adaptable.

I don't know if we have the optimal mix, but I am pretty confident that against most threats we foresee in the future, that we can make look at what we have.

With regard to surface combatants and attack submarines, no, I am not comfortable. There is currently, apparently, a shortfall of Tomahawks.

I am also not comfortable with our ability to attack very large target set, such as the one that Chairman Hunter mentioned, with weapons at low cost.

And so, in my testimony I have focused on three issues, two of which were replenishing the Tomahawk inventory and finding a lower cost cruise missile as a supplement to the Tomahawk for attacking targets that would be suitable for such a weapon.

The CHAIRMAN. What should be the Affordable Weapon?

Mr. BOLCOM. That is the only effort that I am aware of underway right now to develop such a weapon.

The CHAIRMAN. And you would encourage that to be more expeditious in bringing that to production?

Mr. BOLCOM. Well, it goes back to your original question of, "Am I comfortable with the Navy's ability, in the case of surface combatants and attack submarines to attack a target set like the one Chairman Hunter described.

And my answer is, "No, I am not comfortable, especially in regard to the ability to attack the target set with weapons that themselves are relatively inexpensive.

And the Affordable Weapons System program is the only effort that I am aware of currently for developing a weapon that is sig-

nificantly less than the Tomahawk and much closer in cost to the relatively expensive JDAMs that our aircraft can deliver.

The CHAIRMAN. General Cartwright.

General CARTWRIGHT. Congressmen, my sense is, number one: that no single service is going to do any of this alone. And that as a joint military, with all of the services combined, that we possess both the fire power and the ingenuity to take on any credible enemy that we have today.

All of the attributes that have been listed here, the concerns that the congressmen have, I think are valuable and should point in a direction that we carry the future development of weapons and that future can be tomorrow and the next day, and certainly has to address the near-term, as well as, starting to look into the long-term of those things, like hypersonics and persistent surveillance, persistent presence on that battlefield.

So, am I comfortable that we have what we need today to take on any enemy that is out there? Yes.

Am I comfortable that we are aggressively going after the technologies we need, both in the near-term and the long-term, to get us to what we don't know will be an enemy tomorrow. And have the ability to take on any regret factor that this nation may field.

And the idea here being, we should put together a military that can handle any of those regret factors that this nation can't stand to have happen, and we ought to be targeting those technologies towards those type of regret factors.

And are we are doing that? To the best of our ability, but we need these kinds of interchanges to make sure we are going in the right direction.

The CHAIRMAN. General Moseley.

General MOSELEY. Mr. Chairman, I would say given the threat that we know today and given the planning factors that we have been given, I am confident that there is no opponent out there that we cannot impose our will on.

Having said that, the level of comfort is relative to where you are. If you are the air commander in the theater, you are more comfortable with more assets. Let me answer that question by saying in the world of not too long ago, in the Southeast Asia era, the circular error average of a bomb was about 400 feet.

So, it took 200 airplanes to strike a target with some certainty. And in fact, the bridges in Hanoi, in the vicinity of Haptong, we lost a wing of F-105s, striking those bridges.

Now we can strike multiple bridges with a single airplane. We can drop 8,500 pound-class JDAMs off of a B-2 and soon, 300-plus. We can drop 24 off of a B-1, et cetera.

And the JDAM kits, if I remember, are about \$12,500 to put the JDAM kit on an existing bomb body.

So, can we strike multiple targets now with a single, very valuable platform, what we historically have called a bomber? Yes.

Can we hold deep targets at risk with the 500 pound-class weapon that we can drop with a B-2 or the F-15E? Yes.

Can we hold multiple mobile targets at risk when we can get at them with centrifuge weapon and wind-corrected munitions dispenser? Yes. So, can we strike these targets? Yes.

Are we more efficient? Yes. Are we more effective? Yes, because we can use multiple weapons off of a single platform.

So, Mr. Chairman, I would offer the old calculation of a bomber with eight 500 pound bombs in the belly is not the same equation today with a single bomber with 80 independently targetable weapons.

So, have we made extreme progress?

But let me supplement that answer with we need tankers. We need intelligence, surveillance, reconnaissance assets. We need electronic warfare assets.

We need the key enablers for all of us, whether I am the air commander in a joint world supporting naval strike aviation or marine aviation, we still need tankers, we need a new tanker, we still need intelligence, surveillance and reconnaissance, which we are working on with the E-10 and we need electronic warfare and big, high-powered jamming capabilities that we can complement and supplement EA-6 and the Navy's programs with our potentially EB-52.

So, that is how I would see it.

The CHAIRMAN. Admiral Fitzgerald.

Admiral FITZGERALD. Thank you, Mr. Chairman.

I want to get at both questions: do we have enough weapons and why do we have five different types of employment methods. And, I think we have left out a little bit of the big picture here.

There are certain target classes that every weapon has to go against, from the strategic, to the tactical. You may have to go against some hardened and deeply buried targets; you may be going after Saddam Hussein running down the road in a pickup truck.

So you have to be able to have different weapons classes to go after that. And those drive you to different employment methods.

In addition, you may have an army in the field that is hiding in foxholes, or you may have a single, high-value target that is hiding in a cave.

That drives you in different kind of weapons, to area weapons versus precise, penetrating weapons. So you have different classes of weapons.

And then you have different employment types. You have stand-off weapons, then you have direct attack weapons and you have something in the middle.

And I think we have tried to fill all of those holes because it is not a one-size-fits-all kind of employment.

And the other thing that drives you is cost. As Ron O'Rourke has pointed out, the cost of a TLAM to kill a very low-value target is not cost effective.

It is probably better that you just drop a very low cost weapon on him, whereas if it is a really high value target, you may want to put a TLAM on it. So, you have to balance all of those when you employ this force.

On top of all of this, as General Moseley pointed out, the ISR, the Intelligence, Surveillance and Reconnaissance, is absolutely critical here because you can't put a precision weapon on a target that you don't know where it is.

So, you have to make that investment. So, there is an entire kill chain here, it is not just the weapon.

So, I think we have tried to balance that investment for you as we presented our budget this year.

I would tell you, to answer your question directly: do we have enough weapons? The answer is yes, but.

And it is yes, but in that we have come back up to the levels pre-OEF and pre-OIF, pre-Enduring Freedom and Iraqi Freedom, and we have gotten back up to those levels.

But there are still challenges in the precision weapons roadmaps here. JSOW: we don't have enough JSOW in our inventory. The reason we need JSOW is for our F-18s.

You want to be able to have that standoff capability when you have those double digit SAMs out there in order to employ that weapon and get it in there, in either the area of denial row or in the JSOW-C, the unitary.

Do you want a balanced TLAM with Affordable Weapon System? We are going through that analysis now. We have a technology demonstrator to see how the Affordable Weapons System will do.

It is a slow weapon that gives you a lot of persistence over the battlefield and can be reprogrammed by the guy on the ground.

It is only a 200 pound warhead, so it can't go over that strategic target set that you would want to go after with a TLAM, but it is great on the battlefield to go after a tank or after a reasonably low-cost, but maybe high-value target to that Marine on the ground who is going barrel-to-barrel with him.

So, I think there are some challenges there. So, I would say overall the news is good.

Yes, we have the weapons to do this. Do we have the right weapons set to do what we need to do? We have to keep working our way through that.

And with new weapons like JASSM, long-range air-to-surface missile; when you look at some of the other weapons that we have coming down the pike here, I think those weapons are all there so that we reduce, not only the threat to the airplane, but also increase our ability to service empties for targets.

So, it drives your lighter weapons, more precise weapons, more precise sensors on the aircraft and the ability to hit those pinpoint targets.

Thank you, sir.

The CHAIRMAN. Mr. Chairman, I just thought that maybe my question was a bit unfair to those of our witnesses in uniform, who I know of necessity must defend the administration's budget and I am making the assumption, sir, that if they had retired yesterday, were here out of uniform, that their answers might have been slightly different, would you think?

Mr. BARTLETT. I don't know. When we are out of uniform, we have different answers, too.

The CHAIRMAN. But, listen, I appreciate it so much. Thanks for letting me sit in here.

And, I have one other question here that you mentioned, General Moseley, the new hot MIGs that are going to proliferate, at least in China, we think.

They have lots of American dollars to spend on these things and the technology and the technology to build them.

Joint Strike Fighter: we are sending out licenses like 60, a lot of them with some fairly sensitive security information to a plethora of contractors off shore who live under regimes of varying levels of security, in terms of technology transfer to the bad guys.

My thoughts are that we are going to see down the line, we are going to see some Joint Strike Fighter technologies, some stealth technologies and other things showing up in China's industrial base.

All these guys have relationships with China; they like money, China has lots of greenbacks. Lots of companies moving back and forth and pretty soon you are going to see some stuff shooting back at us that looks remarkably like stuff that we made.

Like a lot of stuff out of the Soviet Bloc in the old days. Remember? We would look at weapons systems, and say, "That looks a hell of a lot like ours." Right?

Are you worried about that, Joint Strike Fighter?

General MOSELEY. Sir, you asking me?

The CHAIRMAN. Yes.

General MOSELEY. Sir, Joint Strike Fighter is a critical niche in our portfolio of capabilities. It is critical to the Air Force because it is the backfill for so many of our aging systems.

It is an ideal complement to the F/A-22. And, sir, you know and you have heard us say this, we have built two bombers since we built the fighter. The B-1 and the B-2 we fielded since we built fighters.

The CHAIRMAN. I don't disagree with building Joint Strike Fighter, but I do have a question, as does the Government Accounting Office (GAO), about this extremely liberal licensing of Joint Strike Fighter technology to lots of these participating countries that are going to build bits and pieces presumably.

General MOSELEY. Yes, sir.

The CHAIRMAN. I am worried about that technology flowing out into the wrong hands.

General MOSELEY. The program office is very acutely aware of your questions and of all of our sensitivities to the protection of software source codes, key technologies, and emerging technologies.

The program office, our friends in the Joint Staff, J-8, and the Department of the Navy, the Marines, and the Department of the Air Force take that serious.

We believe that the program office—and we believe it is way ahead on this—is to build this airplane the way we have this laid out and to be ever vigilant about exactly the challenge that you are talking about.

Mr. BOLKCOM. I would like to just chime in on the vigilance piece. Even if we put the oversight bodies in place to watch this, if we don't continue to watch it and we don't monitor it, the technologies are changing; the opportunities to make a mistake are there.

We have to be vigilant on this; this is absolutely critical. It is our competitive edge.

The CHAIRMAN. I would say so and Admiral Fitzgerald, you put some stealth into those aircraft, into China's aircraft, your fleet is at risk.

Admiral FITZGERALD. Yes, sir, I think we are very concerned about this.

I would tell you that technology transfer is reviewed very carefully, but—

The CHAIRMAN. When I saw that GAO report, it has all of these licenses flowing out of Lockheed like water: haven't been reviewed carefully.

And so, I would hope that you folks would invest heavily in this review, because I think this is a crucial thing.

Didn't Chuck Yeager used to tell that story about this little stabilizer thing that they developed, whether used in the X-1 thing and we later got that on our fighter aircraft and it gave us a big advantage.

It wasn't a sophisticated thing, but it was a small thing and once discovered by the other guys, they employed it also.

But there is a lot of stuff that comes out of our enormous R&D base that we have got, which may be not considered to be high level technology, but maybe practical technology that helps the bad guys kill Americans.

I would just hope that you folks would invest in this rather carefully, because I think that is crucial to U.S. survival in that theater.

General CARTWRIGHT. Mr. Chairman, the other side of that is there are lots of technologies out there that are being proliferated, which gets us to that survivability piece of that range payload, persistence and survivability.

That survivability word sometimes is written as an afterthought of the systems out there after the Soviet Union went away. Those systems are out there.

They are being marketed by folks that have some very sophisticated techniques. Those airplanes are very capable, whether they are French or whether they are British, whether they are the Eurofighter or the Rafael or the latest versions of the Mirage, or even some of our own equipment that is out there.

That stuff is out there now and it is a threat.

The CHAIRMAN. Okay.

Thank you, Mr. Chairman. Thanks for your indulgence.

Mr. BARTLETT. Thank you, thank you very much.

Mr. Kline, you have been very patient.

Mr. KLINE. Thank you, Mr. Chairman and Mr. Chairman.

All the good questions have been asked by the chairman and the ranking member, but I am going to pursue a couple of small things, if I might.

I am going to put a nail in this issue of the Tomahawk purchases. The numbers I am looking at show that in fiscal year 2005 we are purchasing something on the order of 290 or 293 and in the out years we are going to 400.

Without pinning down any exact numbers here, I suppose, the question is, does this buy put us ahead of and keep us ahead of where we were at the start of Operation Iraqi Freedom?

Admiral FITZGERALD. Yes, sir. Right now we are at about over 1,700 missiles, which is about where we were when we started Iraqi Freedom. Given the pommel 5x, that will get us in the 2006 timeframe over about 2,000 missiles.

Mr. KLINE. Assuming we don't use any of them.

Admiral FITZGERALD. Assuming we don't use any. What you don't see here is the 454 conversions of the Tomahawk block 2 missiles to Tomahawk block 3, which have occurred over the past few years.

So, in addition to that Tomahawk buy, we have upgraded the older Tomahawks to a newer capability. So, I think our fleet is viable with Tomahawk missiles.

Mr. KLINE. Okay. Thank you.

That does make me feel a little bit better, because my—maybe not as better as I would like to feel, because it was clear to me that we used them up at an alarming rate during Operation Iraqi Freedom and took them down to a pretty low level.

Admiral FITZGERALD. Yes.

Mr. KLINE. And I am worried, considering Chairman Hunter's initial question about what happens if we have to launch a few more the next time because we have a little bit tougher target. How quickly would we run out?

So, thank you for the clarification.

Mr. Taylor was talking about current operations a little bit in his questions and I have a concern that even though it may not be the deep strike that we have been talking about so far, I am not sure that that is always the distinction sometimes between deep strike and not-so-deep strike and depending upon where and how we are operating.

We saw some and read about some spectacular successes in designating targets and being able to hit targets with very precise weapons, but in large part, it is because we were able to designate them with somebody on the ground.

And I am concerned that we may not have as much and enough of that capability as we would like to have.

I am thinking—going back to my own past—about the Marine Corps' mule system which is aptly named, I would say.

And so, my question to you, recognizing you are defending the president's budget, where do you think we are in our ability to designate those targets?

Anybody?

General.

General CARTWRIGHT. I will start first by an acknowledgement even going into these recent conflicts that we had solutions for those problems that were, in some cases, hobby shop and some cases were developed for a service, matched up to a services' platform and didn't really address whoever happened to come overhead, et cetera.

And we have done a couple of things here over the past three years, particularly the effort that started out of a joint test that migrated out to Nellis and now it has migrated down to Joint Forces Command that has tried to get Close Air Support (CAS) into a joint connotation and perspective to set standards for designation, set standards for control of the aircraft, set standards for execution.

That has really garnered us a lot of value.

But in order to get down to the things like the mule and saying, "Well, if your ranging device is less accurate than mine and I don't know in the cockpit what capability you are giving me over the radio."

Things like that, that we are starting to close those envelopes down so that the so-called stack-up of tolerances does not become our enemy, and so that we can operate in a very complex terrain, whether that be urban, whether that be caves, et cetera, with some assurance that the guy on the ground and the guy in the airplane are really talking the same language and able to deliver effect.

We are starting to get the material solutions and field them now. And I am sure my two counterparts here will talk to the material solutions. But I am going to talk to you just getting at the TTP, the tactics, techniques and procedures, getting them standardized, getting all of the services into that game, which is so critical and gave us such great benefit, particularly in Operation Enduring Freedom, but we also saw it in Iraqi Freedom.

And I will turn it over.

General MOSELEY. Congressman, there are a couple of things I think that are a predicate to that answer.

One, anything we do has to be a joint solution. No longer will a Marine fight with just Marines. We are in a joint world. That is the right place to be and it is taking us a long time to get here. I have had five joint assignments and I conclude at every one of those that we can do this better.

Having been blessed with being the commander for Afghanistan and for Iraq, I can tell you it has to be a joint solution. It also has to be a solution that includes special operations as well as conventional forces.

The equipment of the people have to be standard. The competencies of the people have to be a given. The currencies of the people have to be a given. These cannot be assumed.

And so, if there are 30 parties on the ground, all 30 have to have the capabilities, the currencies and the competencies that you can work a variety of air.

Because when you bring weapons to bear, as you know, against a surface target with friendlies close, there are two parts to that. My pilot has to fly through that cylinder of air that is contested to deliver the weapon. The weapon has to be delivered to the right place.

All people involved in this have to be competent and current to be able to do that, because once you tell a JDAM or an LGB where to go, it will go there.

So at Nellis, what we are attempting to work now is a complete grid of the Western ranges: Goldwater, Twentynine Palms, Yuma, NTC, Nellis, Fallon, Euter. Every range in the West will be gridded the same as if we did a kill box in Afghanistan or in Iraq.

Mr. KLINE. And way overdue, by the way.

General MOSELEY. Absolutely. Again: joint solutions.

Every kid that will go out there in the future will have a consistent set of gear, whether he or she is a Marine or a rifleman in the Marines or an infantryman in the Army or a special ops team.

But that also includes the sensors, it includes the command and control, it includes all of the connectivity with a command and control node, be it a CFLCC, a coalition forces land component commander, an air component commander, a maritime or special ops commander. And at every one of these levels, you have to come back to the notion of it has to be a joint solution.

We have to train this entity, this enlisted tactical air controller (ETAC), this ground forward air controller (FAC), this entire ground tactical air control system has to be trained to a standard that we can hold everyone to. And we have to be able to practice this.

We have to be able to do this, whether it is Twentynine Palms or Nellis or Fallon or Euter. Or we have to be able to do advanced composite force training as a team; to include special ops, which is an interesting unto itself relative to equipment and training.

Mr. KLINE. Thank you.

Admiral, you may want to jump in too, but I guess what this is pushing to is, sort of, where I started with this is, are we buying that common equipment now?

When I look deeper into this budget we are looking at, are we buying something that essentially replaces the mule, and that the soldier will have, the special operator will have, the Marine will have, that has the confidence of people with wings whether they are gold or silver? Are we buying that?

General MOSELEY. Congressman, if you ask right now, "Is everyone equipped standard?" the answer is "No."

Mr. KLINE. I know they are not but are we—

General MOSELEY. We are moving the ball another 10 or 15 or 20 yards toward a goal line that gets at your point.

Because remember in Afghanistan, the teams on the ground acted as sensors for me to drop bombs on, not close air support—

Mr. KLINE. Exactly.

General MOSELEY [continuing]. Not interdiction, but to deliver air ordnance on sets of bad guys. So the ground parties were effectively no much different than a Litening pod or another sensor.

And now when you transition that to troops in contact, when Jim Maddas took his Marine team into southern Afghanistan, in Durano he went 350 miles into Afghanistan with no artillery because an airman was there with the capability to bring ordnance to bear.

So I would tell you, I am optimistic because guys like me and Jim Maddas and Jim Amos and David McCarin and J.R. Vines who have actually fought this for two years, have got it.

Mr. KLINE. Thank you.

Admiral, are you confident that we are buying it?

Admiral FITZGERALD. I will try to get at your question a little bit here.

As you know, a mule in the old days was just a laser that you fired and you dropped a weapon, and the weapon went where the laser spot was.

We have taken a generational leap from that, where we now have the ability for fielded SOF forces and fielded Marines to take and not only lose a point, but also triangulate that point and give you precise coordinates that you can put a weapon on; i.e., a JDAM or a GPS kind of weapon.

So the answer is "Yes." That capability is in the budget and going out to the fleet.

But there is a bigger issue here, and that is, "How do you make the leap from analogue to digital?" Analogue being a person transmitting a set of coordinates over radio and then having that weap-

on end up on those coordinates. We have had several friendly fire incidents because of that. We have to get to the digital side of this.

So it is not just a matter of equipping a guy in the field with a piece of equipment and give those coordinates. It is also closing the infrastructure so that you can do that.

I will tell you, we are trying to get at it with systems in our Super Hornet, systems in our Marine AV-8s, that are able to communicate digitally between that air controller on the ground and that airplane, so that you can communicate that nine-line brief direct to the airplane.

We also have the capability now of doing point-to-point transmission of imagery from the airplane to the ground or from the ground to the airplane.

We had in northern Iraq special forces out there taking pictures, sending them up to airplanes, things like that. So there is a whole larger piece to this than just that capability on the ground.

Mr. KLINE. Thank you.

Just let me say I appreciate very much that everybody is working on tactics and techniques and using whatever equipment we have out there to good effect.

I have great confidence in that. And I have spent some time talking to majors in the Army and the Marines recently who were all veterans of Iraqi Freedom. So I know that everybody is working hard, we have a lot of smart people.

What I was really driving at is, for this year, for next year, are we buying the equipment that the troops that are over there now in Operation Iraqi Freedom II and III and IV, and how many we go to, are going to have, because, frankly, we don't know how that war is going to go from day to day?

And what I was trying to get at, is are we making the buy of the hardware? And I got the answer yes, I think.

Admiral FITZGERALD. I will have to get back to you on quantity, sir, but the answer is that that equipment is getting up there.

General MOSELEY. Sir, there is also a part of this from the Air Force, because we are the people that have the air-to-ground operations school at Nellis.

The secretary and the chief and the leadership have stood up another focus area, which is battlefield airmen. For the Air Force, we have had sets of people that did various things, whether they were ground forward air controller (FACs) or ETACS or whether they were ALOs (Air Liaison Officer), or whether they were special tactics or combat weather, et cetera, combat controllers.

We are going to merge all of this into a single Air Force Specialty Code (AFSC), like an Military Occupational Specialty (MOS). You are going to go through the equivalent of undergraduate pilot training. Then you will go to a lead-in and a top-off.

You will maintain that AFSC. You are a battlefield airman. And that standard training will be the goal post for all ETACS.

And we are working with Navy, Army, Marines and coalition partners to baseline the requirements so you get a qualification and a currency and an expected level of performance.

And you are able to do that at a place like Nellis, so you can partner with National Training Center, Twentynine Palms, Yuma, Fallon.

And you can do this not just if you are about to deploy, but every single time you go into the field, you go with that equipment, with those expected performance criteria, and with that gridded range, so that when you grid a range in country X, your habit pattern is exactly the same as it was at National Training Center, Twentynine Palms.

And that is ongoing right now, sir.

Mr. KLINE. And that is excellent and very heartening. Thank you.

Mr. BARTLETT. Thank you very much.

I would like to recognize Mr. Marshall.

Mr. Marshall and I appeared together several weeks ago on a Fox news channel. Because we are Republican and Democrat, they expected there to be some sparks, but they didn't know that we were both on the Armed Services Committee.

And here we have complementary, rather than adversarial, relationships. So they were disappointed. There were no sparks.

Mr. MARSHALL. And we will never be invited back. [Laughter.]

Mr. MARSHALL. And we will never have any difference of opinion.

Mr. BARTLETT. Mr. Marshall.

Mr. MARSHALL. Thank you, Mr. Chairman.

Never have any difference of opinion on the Armed Services Committee.

I have to say, I am here mostly just to listen, learn. I am very impressed by the quality of what I have heard. And it includes the civilian folks who are here, as well as the military. So it comforts me a lot.

I have a couple questions. One, everybody here has mentioned human intelligence (HUMINT) as being a critical ingredient to being able to actually use the weaponry that we have, that is incredibly accurate. And we are in a joint Army, Navy, Air Force, everybody is working together kind of a mode here.

What are we doing? Do you know offhand, what are we doing? What sort of commitment is DOD making in the direction of improving our human intel?

I was in Israel this summer. I talked with General Elan, who I think at that time was their planner. He has now moved up to another level. I am not quite sure what his level was.

And I asked him what he thought our challenge would be in Iraq. And he was extremely complimentary of our capabilities.

And he said, "The challenge is going to be that you don't have any human intelligence on the ground, so you are really not going to know what your targets are. And you are going to have a very difficult time as time progresses finding out where the bad guys are and knowing when they are going to attack you." Those sorts of things.

What are we doing about that? Do you gentlemen know?

General CARTWRIGHT. I will start, and then let others pick up.

Expand it out to a few dimensions here. There are those countries in which we have a presence and a conflict erupts to which in the theater security, cooperation, et cetera, we want to have a good interface at the cultural level so that we understand the people and to the extent that we have interfaces, we might gain intelligence.

There are those scenarios where we have no presence at all. It is a denied area.

What we might have would be probably the onesies, twosies, and it is a very clandestine, limited exchange level. That is our biggest challenge in those areas.

There is a substantial increase in this budget for that kind of capability at a broader range than we have it today.

There is also, during the conflict piece, of your ability to find these targets that are a very complex terrain, whether you talk about caves or you talk about cities or you just talk about mobile-type targets that are difficult to pinpoint, and your ability to keep track of them.

And both in our investment portfolio you will see capabilities to try to be able to do that, both from the human standpoint and from the sensor standpoint. Both investments you will see substantially in this particular budget.

Then on the backside of a conflict, should you have to go to conflict and then resolve, the idea of security in your abilities, whether it be an insurgency somewhat to what we see in Iraq, or whether it be just in taking the local population, which may not be ready to capitulate completely, the ability to have those cultural interfaces for the soldiers or the Marines that are in the cities or in the rural areas to be able to create security, which is the first attribute that you want to get post-conflict, to enable you to move on to strategic objectives.

You have to establish that kind of HUMINT. But again, it is more likely to be at the individual servicemember level and their relationship with the local population.

The question that we are trying to struggle with right now is have we given our soldiers, sailors, airmen and Marines sufficient training to be able to do that and to take advantage of it.

We can do better at that. And there are resources in this budget to address that issue. There are also training programs that you will see in each of the services that are starting to reach out in those areas.

So from a sensor standpoint, pre-, during and post-conflict, we have investment. From an individual human aspect we have investment pre-, post and during.

And then there are training programs that are going at that issue also to proliferate that capability. It is critical. We relearn this lesson too often.

General MOSELEY. Congressman, I think General Cartwright has answered at the tactical and operational level, exactly how I would answer.

Because at the tactical and operational level, you may have a Marine patrol or you may have an 82nd Airborne foot patrol or you may have a company's military police that should be and must be trained into capturing nuances and capturing things that we would class as HUMINT.

We also have to be able to match, at the operational level, things that are signals and imaging, things that are infrared and electro-optic and imaging electro-optic.

We have to be able to match that with both signals and electronic means. And we have to be able to fuse that to paint a picture to know what is actionable and what is not.

And so that spectrum at the tactical and operational level runs normally from a tip to the movement of an actionable sensor to the movement of a shooting asset, whether it is surface or air, to a decision made to engage it based on now confirmation of the tip. The tip likely turns out not to be a valid target.

You have to be able to cross-reference and you have to be able to matrix all of your intelligence assets to be able to figure out very quickly whether you drop on a target or engage a target that may in fact turn out to be noncombatant.

Because, as you would expect us to be: we are very, very sensitive and professional when it comes to proportionality in non-combatant losses.

So I would agree 100 percent from the operational and tactical level down.

At the strategic level of HUMINT, that is out of my expertise level and would get us into the notions of directors of central intelligence and would get us into other classifications as to expenditures or funding of HUMINT at those levels.

But as an operational guy, you will never have enough, you will never have it quick enough, you will never have it so you have 100 percent solution. You have to be willing to operate at the 80 or 85 percent solution, which takes you to all of those complementing and supplementary systems based on that tip.

So are we okay with that? Not as good as we would like to be. But are we moving down the right road? Yes, sir.

Mr. O'ROURKE. Mr. Marshall.

Mr. MARSHALL. Yes, sir?

Mr. O'ROURKE. I would just say if you look at Afghanistan and Iraq, you see great evidence that we are very good at state-on-state conflicts. One is accomplished very easily and that is one thing we excel at.

But certainly after the state-on-state conflict, dealing with non-state actors, insurgents, is a much more difficult endeavor. And that is where HUMINT becomes critical.

The one thing I would mention is that we are learning and working quite closely with the Brits. Our coalition partners have a very extensive experience with stability operations. So that is one effort that I know of.

And in connection with insurgencies, it has been reported that in trying to track down Saddam Hussein, we had to develop different kinds of intelligence-collecting and intelligence-assessing techniques.

We had to take rules that were developed for battlefield intelligence and essentially set them aside in favor of procedures and software that were developed for understanding and tracking organized crime families.

It was that kind of approach to intelligence, to learn about family and clan relationships, that our forces in Iraq apparently had to learn, had to teach themselves, so that they could get at this different kind of problem.

So the kind of human intelligence that you would want to get and your ways of developing it for an insurgency are different from the classic techniques that you would apply for tactical battlefield kind of intelligence.

General MOSELEY. Congressman, could I add one more thing?

Mr. MARSHALL. Yes, sir.

General MOSELEY. Just as an adjunct of that. I haven't had the privilege of actually doing this for a while.

I am here to tell you that our soldiers and our Marines that are on the ground are absolutely the finest and quickest to adapt of any of the other coalition partners, whether it is 82nd Airborne, 4th Infantry Division (I.D.), 3rd I.D., 1st Marine Division, or any of the combat teams, to include Guard and Reserve, I might add.

These kids are the finest, most professional, most capable and the most quickly adaptive of any of the coalition partners.

We all should be very proud of them and hold them in very high regard, because they are adapting on the fly to a very, very creative and very well-resourced and capable opponent.

And they are doing the Lord's work every day and they are making it look easy, and it is not.

Mr. MARSHALL. Admiral, you got out of responding, so I have a question for you.

You were commanding the, what is it, the Roosevelt Task Force, is that what you call it?

Admiral FITZGERALD. I commanded Task Force 50, which was—

Mr. MARSHALL. Is that the Roosevelt?

Admiral FITZGERALD. Roosevelt. Yes, sir.

Mr. MARSHALL. You had a Reserve squadron that participated, and I understand performed quite well: grading landings, superior, 100 percent mission completion. In fact lending planes to the regular Navy squadrons.

That is one of four squadrons and I understand the Navy is thinking about decommissioning one of the four squadrons. And I wonder whether or not that is a wise move.

I wonder, frankly, if we ought not to be heading in exactly the opposite direction, whether it isn't both more cost-effective and battle-effective to keep the Reserve squadrons where you have more senior pilots, you can pick and choose, get the cream of the crop.

You have more senior mechanic teams; they are going to beat the pants off of the typical younger pilots everyday, and certainly beat the pants off the younger mechanics teams. And we are not paying them full-time.

It just seems to me to be headed in exactly the wrong direction. There are certainly many instances in which you want a younger crowd.

I was a 21-, 20-year-old recon platoon sergeant ranger in Vietnam. I can't do now or wouldn't do now what I would do then, even if I could. But I don't think that is true where air is concerned.

And so, I wonder if the Navy ought not to rethink that, I think, plan in light of the experience that you had on the Roosevelt, if for no other reason.

Admiral FITZGERALD. Congressman, there are about three different pieces to that question. Well, let me try to answer that.

I couldn't agree with you more, that those pilots and those senior mechanics are incredibly valued to the Navy.

The problem we have is that those folks are in our oldest equipment. And that equipment isn't necessarily transferable to the skills and those things required to fly our newer airplanes.

For instance, our reserve P-3s, our older block two P-3s that don't even have the same equipment as P-3. The F-18As that were flown by that squadron were an amalgamation of all of the Reserve F-18A-pluses so that we could have enough to get them out there.

The real value is in the person in the Selective Reserve and in those pilots and the Selective Reserve that are in the crews there.

And so, while it is true we are decommissioning the squadron, we are not getting rid of those people. Those selective reserves are being augmented into what we are calling FAUs, fleet augment units, that provide the capability to surge people versus having to maintain the hardware.

So, we are more interested in the bodies than we are in the actual hardware, because the hardware is aging. We just don't have the money to maintain that old hardware.

So, I guess that would be the first point.

The second point is, as we have gone through TACAIR integration here, we have said we are fighting from the flight deck, that, as was alluded to here earlier, that the number of airplanes has been reduced.

And the reason it has been reduced is because the availability of the airplanes is much better now so that you don't have to have all your reserve airplanes down in the hangar base so that when the one breaks on top you can bring another one up.

But what that has done is it has reduced the air crew manning on the aircraft carriers. So, when you want to surge, you have actually more sorties available in the airplanes than you have people to fly those sorties.

So that is where we see the real value of being able to surge those pilots into squadrons that they have trained with through the work up cycle, so you have Selective Reserve crews who are trained, who know that new airplane, who have the skills necessary to get out there in the squadron and do that.

So we see incredible value in these folks. We just need to restructure the way that we use them, because yes, that was the first time that we deployed a Reserve squadron on a carrier in 50 years.

We have carried that overhead for a long period of time, when the overhead we really wanted to carry was those Selective Reserves themselves.

Mr. MARSHALL. One of the ways in which you draw such qualified people is location.

Admiral FITZGERALD. Yes, sir.

Mr. MARSHALL. And how do you deal with the locational problem of the great mechanics? Take Atlanta, for example, the pilots are there, because that is the largest, the busiest airport in the country.

How do you keep them abreast with flight hours, training, you just keep them from getting rusty on the particular platform that they are going to be flying if you ever call them up when they are located in Atlanta and the platform is located God knows where?

Admiral FITZGERALD. From the pilot side, that is relatively easy. The analysis that we have done, most of those Selective Reserves actually fly into the base where they are going to go train from, several states away normally.

So, whether that base is in Atlanta or wherever, that is not as big an issue as it is for the maintainers.

We are looking at a little different model for the maintainers, in that they all do 14 days a year active duty for training, bringing them on, doing that, and then having them do remote training, those kind of things.

Mr. MARSHALL. I don't know that it was fair to my fellow committee members to even ask that question. I appreciate your responses.

Thank you, Mr. Chairman.

Mr. BARTLETT. Thank you very much.

Because this is an oversight hearing, there are some questions to which we must get the answer.

I have four pages of small print here of questions we need to ask you. With your permission, we will submit these to you for the record. Is that okay?

Admiral FITZGERALD. Yes, sir.

Mr. BARTLETT. Okay. Thank you very much. We really appreciate your testimony.

We really appreciate our chairman coming to join you.

An additional comment or question, sir?

The CHAIRMAN. I just had one.

And, Mr. Chairman, thank you for letting me come in and join you. I think this has been a great hearing, and thanks to my colleagues for putting up with me coming in and taking some time.

I just had one last question for you, General Moseley.

And that is you folks didn't much like the congressional direction that we retrieve these 23 B-1 bombers. But I understand you think you could live with retrieving seven of them, is that right?

General MOSELEY. Sir, we have seven that we have now taken the \$17 million that you gave us; we have put \$200 million of our non-program money into the seven. We will then get 67 total, 60 plus the seven, into Block Echo status, which is as far as we have the B-1 now.

We are now looking at also mounting Litening pods on the B-1s to give them an additional capability. And in a hearing at a different level, I would like to share with you another couple of programs that we have planned for those 67 airplanes.

The CHAIRMAN. Okay. Let me ask you just a little follow-up on that.

And the planes performed well. Your initial strategy to upgrade the planes that you had by taking some planes out of the force and using the money to upgrade the remaining planes worked well, did it not? You had an effective plane in this last theater.

General MOSELEY. It did, sir.

But there is also another part of that which are the airplanes out at A marker in the boneyard. We have had to use a number of those airplanes for major structural sub-assemblies to keep the existing fleet viable and survivable.

The CHAIRMAN. And you said so some of them aren't retrievable?

General MOSELEY. Seven of them are not.

The CHAIRMAN. Seven of them aren't?

General MOSELEY. Seven of them are not.

The CHAIRMAN. So you have 16 that are retrievable.

General MOSELEY. There are 17 that are retrievable.

The CHAIRMAN. Seventeen.

General MOSELEY. We are going to take seven, spend the \$17 million you gave us, put about \$200 million of our own money in that, get those all up to Block E status.

And then that leaves us the 10 out there that we have as a continual option on main structural assemblies and parts and pieces so we don't have to cannibalize the existing 67.

The CHAIRMAN. Upgrading the remaining ten is basically a matter of money, is it not?

General MOSELEY. Sir, it is a matter of money, but please let me also say, to get the B-2 fleet and to get the B-52 fleet and the B-1 fleet out with attrition reserve airplanes in the right numbers to 2025, while looking at these two offices to build perhaps the bridge airplane, F/B-22-like platform of some kind, conduct the synergy of efforts that we are looking at with munitions, ISR tankers, command and control to look at the E-10s to put Airborne Warning and Control System (AWACS), Rivet Joint, Compass Call, AB-CCC, Joint Surveillance Target Attack Radar System (JSTARS) all on the same platform to do all of that is going to take money.

And so, we want to work with you on this to be absolutely open. And we are not closed to good ideas.

But we are looking at a fleet of tankers that is not viable: Eisenhower-era tankers to be able to get us into the 21st century—

The CHAIRMAN. And I guess—and that is the last question. I think you folks would rather they put aside the personalities and the present skirmish, especially the one that exists in the other body over these tankers, and separate that from the need to have an aircraft and build the aircraft.

Is that right?

General MOSELEY. Sir, let me try to answer that for you.

There is a requirement for the tanker. There is a—

The CHAIRMAN. Do you think it is a valid requirement? It's not a made-up requirement?

General MOSELEY. I am the operating commander from two campaigns.

The CHAIRMAN. We agree with you.

General MOSELEY. I could not take the KC-135E and in fact said, "Do not deploy it; I don't want it over here."

The Rs, once we configure them to do baskets, we can only do baskets. We only have eight of the KC-135s that can refuel themselves.

The plan that we have for the KCX with a 767 is valid. The options of contracting are not operationally viable. The options of re-engining old 707s gives us a re-engined 50-year-old Eisenhower-era tanker: not viable from my perspective.

Or the ability to go look at something out there that is outside the boundaries of a 767-class airplane.

Something bigger is too big, because it sinks through the asphalt in the desert. Something with a bigger wingspan is too big because

we can't park enough to do Navy, Marine, coalition and Air Force assets. Something smaller doesn't carry the load for us.

So it takes us to a 767-class airplane.

So a long answer, Mr. Chairman, yes, the requirement is valid. Yes, we need a new tanker. And yes, we cannot operate these 707s at the level that we have in the past.

Because remember the studies that said they will go longer were all pre-9/11 studies. We surged this fleet.

We are still taking about 300 days to get one through depot. We are still manufacturing major subassemblies at the depot instead of doing program depot maintenance. And we have still about a third of the fleet down at any one time, which impacts naval air, Marine air, coalition air and U.S. Air Force air.

So long answer to a short question.

The CHAIRMAN. We are going to try to help you.

General MOSELEY. Yes, sir.

The CHAIRMAN. You know, we put money in for tankers before the big fuss over how we were going to get them.

And I think we agree with the idea that we need to get them, and separate that from the rest of this mess and move ahead and acquire them.

General MOSELEY. Well, Mr. Chairman, you have helped us.

We have \$150 million in the 2006 Program Objective Memorandum (POM) for the KCX. And over the FYDP we have a little over \$4 billion in this.

So, this is not our first rodeo. We do understand 707s and how to maintain them, and we have a plan to get us to the new world.

The CHAIRMAN. Okay, thank you.

Thank you, Mr. Chairman, I appreciate it.

Mr. BARTLETT. Thank you, Chairman Hunter.

And thank you all very much for your testimony. And we stand in adjournment. Thank you.

[Whereupon, at 4:45 p.m., the subcommittee was adjourned.]

A P P E N D I X

MARCH 3, 2004

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

MARCH 3, 2004

**Statement of the Honorable Roscoe Bartlett
Chairman, Subcommittee on Projection Forces**

Conventional Long-Range Strike Capabilities Hearing

March 3, 2004

The Subcommittee will come to order.

This afternoon we will receive testimony from the Congressional Research Service, the Joint Staff, the Air Force, and the Navy, on the Department of Defense's long-range conventional strike capabilities.

While the United States enjoyed access to well-established military bases in Europe, the Persian Gulf, North East Asia and South East Asia during the Cold War, finding adequate forward bases from which to project forces with shorter ranges may be difficult to do in areas where threats are beginning to emerge. In Operation Enduring Freedom in Afghanistan, the lack of regional bases limited the effectiveness of land-based tactical aircraft. As a result, Air Force long-range bombers and Navy and Marine Corps

carrier-based aircraft dropped most of the bombs and conducted most of the combat sorties. More recently, the inability to access, or fully access, bases in Turkey and Saudi Arabia complicated U.S. air operations in Operation Iraqi Freedom, making those forces capable of operating over long distances, or from sea bases, much more valuable.

Today's conventional long-range strike capabilities are formidable. They include 96 B-1, B-2, and B-52 combat-ready bombers, but our bomber forces are aging. For example, the 44 combat-ready B-52s average over 40 years of age. Our long-range cruise missile inventory includes the Conventional Air-Launched Cruise Missile, or CALCM, which is launched from the B-52, and the Tomahawk Land Attack Missile, or TLAM, which can be launched from Navy surface ships or submarines. However, after firing over 800 TLAMs in Operation Iraqi Freedom, our TLAM inventories need to be replenished. Today's Naval aviation aircraft force structure includes 10 active, and one Reserve, Navy carrier air wings. It also includes three active, and one Reserve, Marine

air wings. Under the Navy - Marine Corps Tactical Air Integration Plan, the total number of primary authorized strike fighter aircraft in the Department of the Navy is being reduced from 872 down to 660.

While we will have less actual force structure in the future, the new F/A-18E/F Super Hornets and Joint Strike Fighters will certainly provide a more capable carrier air wing than the F-14s, and F-18As and Cs of today. Similarly, modifications to our bomber force, and new weapons such as the Joint Air-to-Surface Standoff Missile, or JASSM, can provide improved long-range strike capabilities. As we look across the menu of conventional long-range strike options in the Air Force and the Navy, the question becomes whether we are investing the right way to maintain and improve the Department of Defense's capabilities to conduct conventional strikes against distant targets in this era of limited and uncertain access to land bases.

To address these and other important issues, we've assembled a distinguished panel.

First, from the Congressional Research Service,

Mr. Christopher Bolkom, a specialist in national defense who will help us understand aviation issues.

Second, also from the Congressional Research Service,

Mr. Ron O'Rourke, a specialist in national defense who will discuss Naval issues.

Thirdly,

Lieutenant General James E. Cartwright, USMC
Director of Force Structure Resources and Requirements (J8)
Joint Chiefs of Staff.

Fourth,

General T. Michael Moseley, USAF
Vice Chief of Staff
United States Air Force.

And finally,

Rear Admiral Mark P. Fitzgerald, USN
Director of the Air Warfare Staff
Office of the Chief of Naval Operations.

**OPENING STATEMENT OF DIRECTOR FOR FORCE STRUCTURE,
RESOURCES, AND ASSESSMENT DIRECTORATE (J-8) THE JOINT STAFF
LIEUTENANT GENERAL JAMES CARTWRIGHT
PREPARED FOR THE HOUSE ARMED SERVICES COMMITTEE
PROJECTION FORCES SUBCOMMITTEE
CONVENTIONAL LONG-RANGE STRIKE CAPABILITIES
MARCH 03, 2004**

Mr. Chairman, Members of the Committee: Thank you for the opportunity to meet with you today to discuss the U.S. military's role in conventional long-range strike capabilities. I'd like to first thank you for the continued bipartisan support that you give to the men and women of our armed forces. That support is appreciated, and it is critical to our operational success.

Today we remain ready to support the President's National Security Strategy to assure our allies, while we dissuade, deter and defeat any adversary. Our challenge for the coming year and beyond is captured in three priorities: winning the War on Terrorism, enhancing joint war fighting, and transforming for the future.

Our continued success in the area of conventional long-range strike is a vital component of each of these priorities and requires a well-integrated military, interagency and coalition effort which leverages the capabilities of our Naval Strike Groups, land-based long-range bombers, tactical strike aircraft, and their key enablers, the tanking, electronic warfare and surveillance aircraft.

To aid the Joint Requirements Oversight Council in determining warfighting needs with a capabilities-based approach, we are developing joint integrating concepts. These

concepts are far more focused than functional and operating concepts, and define specific tasks to be conducted. They are designed to bridge the gap between how we want to fight and the capabilities we need. Key to our discussion today is the Joint Integrating Concept for Global Strike.

To that end, US Strategic Command (STRATCOM) has reported significant progress in their new mission area of Global Strike, and they are on schedule to achieve full operational capability this year. Global Strike will enable us to hold at risk emerging target sets not included in a deliberate plan, where timeliness is critical.

Looking into the future, we are drawing on analysis in many forms. With the support of this committee, studies, like the alternative future fleet platform architectures, will examine traditional and alternative roles and missions, including long-range conventional strike, and the impact of evolving technology on future forces.

In enhancing our conventional long range strike capability, we seek to increase our persistence over the battlefield and our ability to range key targets in denied territory. Our enhanced capabilities will enable us to respond to the commander's needs in a timely fashion, achieving strategic and operational effects with lethal and non-lethal means.

In seeking these attributes, Some of the future technologies we are pursuing with the services, NASA and DARPA include high-speed missile systems, hypersonics, high-

speed turbines, advanced thermal protection systems for common aerial vehicles, scram jet technologies and high temperature materials for low observables.

In short, the conventional long-range strike capabilities of today's military forces have demonstrated speed, flexibility and precision in Iraq and the ongoing Global War on Terrorism. Maintaining our unchallenged military superiority requires investment to ensure the current readiness of deployed forces while continuing to transform military capabilities for the future. Thank you.

GENERAL T. MICHAEL MOSELEY

**Written Statement of the Vice Chief of Staff of the Air Force
House Armed Services Committee
Projection Forces Subcommittee
3 March 2004**

Mr. Chairman, Congressman Taylor, and distinguished members of this Subcommittee, thank you for the opportunity to come before you to discuss Air Force capabilities for conducting long-range strike operations -- a matter of national significance. Today, Mr Chairman, your subcommittee is striving to answer the question "how should funds be invested to maintain and improve DoD's capabilities for conducting conventional strikes against distant targets in an era of limited and uncertain access to land bases in overseas theaters of operations?" From the Air Force point of view, the immediate answer to that question is full funding of the FY05 President's Budget that you have before you.

Historically, power projection has been a unique national characteristic that enables the diplomatic, informational, and economic instruments of power. Being able to ensure freedom of navigation and freedom of trade; being able to rapidly send envoys and aid to one's allies; and being able to rapidly deploy decisive military forces are all aspects of power not lost on any great nation since the time of the Athenian Navy. Today, the American military supports a National Security Strategy that demands each of these capabilities and more in order to achieve its goals.

As airmen, we have always understood the criticality of the power projection mission and the challenges associated with it. Whether flying over "The Hump" of the Himalayas to get supplies to ground forces fighting the Japanese in China or Doolittle's Raiders and their daring mission over Tokyo, the Pacific theater during World War II

epitomized the challenges of using American airpower over long distances. Similarly, American airmen flying from fields in England had to face the newest generation of German aircraft, and integrated air defense system, and tremendous distances on legendary raids like ones against the factories at Schweinfurt and the refineries at Ploesti.

Today, we can look back and be thankful that Congress was willing to work with a handful of airmen to improve its long-range strike forces. In fact, at the outbreak of war in 1939, airmen had few options in conducting strikes against distant targets. American airmen found themselves with a mere 26 long-range B-17 bombers. In the next two years, US airpower would ramp up to 374 strategic bombers, while the German Luftwaffe would reduce its long-range strike fleet and abandon designs of a four-engine bomber. Our heritage set up this lesson illustrated over and over again throughout US military history -- long-range strike is a vital national capability and critical component of any US National Military Strategy.

We view long-range strike as the capability to achieve the desired effects rapidly and/or persistently on any target set in any environment anywhere at anytime. As airmen, we understand that this task encompasses much more than just bombers. Everyday, the Air Force is responsible for being able to conduct long-range strike missions as part of the Global Strike Concept of Operations (CONOPs). Unlike any other service, our forces must be able to be responsive to multiple combatant commanders simultaneously, be able to strike any point on the face of the planet and we must be ready to do so at great distances.

In the past five years, the US has called on airmen from Whiteman Air Force Base in Missouri to engage targets in Belgrade, Serbia -- airmen from Diego Garcia in the

Indian Ocean to destroy Taliban targets inside Afghanistan – and airmen from Fairford Air Base in England to play a major part in ending Saddam Hussein's despotic regime. In this last case, Operation IRAQI FREEDOM was unique. United States airpower had maintained an air presence over Iraq for nearly 12 years. During this period, we:

- Leveraged access to nearby bases in the region;
- Continually maintained battlespace access by suppressing Iraqi air defenses, and
- Nearly completely characterized the nature of our adversary and its systems.

We are unlikely to encounter such a luxury in subsequent conflicts. In the future, we will require deep strike capabilities to penetrate and engage high value targets during the first minutes of hostilities anywhere in the battlespace. Our National Military Strategy requires a portfolio of deep strike capabilities that can operate effectively even in the face of advanced enemy anti-access systems or limited support from overseas basing.

Long-Range Strike Mission

Mr Chairman, today, the Air Force provides deep strike capabilities through a variety of platforms, the advanced weaponry they carry, and the critical enablers, which amplify the effectiveness of the total system. Our legacy bombers, the B-1 and B-52, have combat proven deep strike capability in permissive and moderate threat environments. Against the most advanced current and future enemy anti-access threats, the F/A-22 will be required. Combining stealth and supercruise, the F/A-22 will destroy these systems -- pave the way for penetrating F-117s and B-2s -- and support follow-on operations by our non-stealthy bomber and legacy fighter-bomber fleets.

Although today's hearing is not about munitions, Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR), or Unmanned Aerial Vehicles (UAVs) associated with long-range strike – they cannot be totally separated from the equation. The effectiveness of an entire strike package depends on many of these items. For instance, the low-observable Joint Air-to-Surface Standoff Munition (JASSM) adds penetrating stealth to our responsive and highly persistent B-1s and B-52s. The JASSM-ER (Extended Range) will add even further reach to the current deep strike capability. Other capabilities, such as unmanned low-observable vehicles, information warfare, and other initiatives like the future conventional ballistic missiles (CBM) fill out the deep strike portfolio and complement the air-breathing pillar. An integral part of long-range strike is deep surveillance and reconnaissance, and the associated intelligence analysis that provides high fidelity information and Predictive Battlespace Awareness ensuring that we employ our deep strike capabilities in the most effective manner possible.

Today we will closely examine Air Force long-range Bombers, theater-range combat aircraft, and some of the Air Force support aircraft that enable long-range strike assets. There are five key points that we must carefully review in each of these platform areas.

Current Long-Range Strike Capabilities

First, the current military strategy demands that services organize, train, and equip their forces in order to provide combatant commanders a range of executable options. Our current long-range bombers, theater-range combat aircraft, and support aircraft are currently adequate to meet this task. Bombers have been, and will continue to be, the

critical pillar in the long range strike system of systems. Our Air Force long-range strike systems must continue to contribute significantly to two key LRS attributes: responsiveness and persistence. Bombers cost effectively deliver a robust, combat-proven, man-in-the-loop responsive capability, reaching any point on earth less than 24 hours after launch from a CONUS base and faster from overseas bases. Additionally, bombers carry the widest array of weapons in the Air Force inventory, with unparalleled flexibility to adapt to future weapons that enter the inventory. A broad weapons mix permits planners to precisely tailor weapons loads to create specific combat effects enhanced by long range strike operations. Additionally, only bombers carry a large quantity of munitions and have long endurance in the battlespace. These two qualities are key to providing persistence, our ability to hold adversary targets continually at risk and employ ordnance to create effects at any tempo we choose. To fully exploit the innate capabilities bombers bring to the fight and closely tie them to complementary capabilities in the systems of systems, we must focus on enablers: Intelligence, surveillance and reconnaissance, and command and control capabilities which fully leverage the power of networked communications. Only with robust, modern enablers do we maximize the inherent responsive and persistent capabilities of our bomber fleet to, for example, adaptively target the enemy only minutes after the decision to engage.

Today, our current projections show all three (B-1, B-2, and B-52) bombers to be viable weapons systems for decades to come. Modernization of this bomber force can meet near term combatant commander requirements at significantly less cost than a new bomber equivalent but cannot go on forever. However, aging aircraft sustainment and advances in threat technology will eventually make a new bomber equivalent mandatory.

In order to meet our wartime commitments, the Air Force needs a minimum of 157 bombers (B-1, B-2, B-52) operating at their full capability. Currently, the Air Force is pursuing a time-phased modernization program (approximately \$600M in FY05) of this fleet in order to improve its lethality, survivability, supportability, persistence, and responsiveness. The table below illustrates the fleet size, including number of platforms in the inventory – Average fleet age – Mission Capable Rates – and our proposed investment included in the FY05 budget submission.

Type	Platforms (Combat Coded) Air Force Requirement	Average Fleet Age (Approx)	Mission Capable Rates	FY05 Investment \$\$ (3600 & 3010)
B-1	67 TAI (36 CC) AF Req: 60 TAI	15 Years 4400 hrs	CY03: 70.7% Last 6 months: 69.7% AF Standard: 76%	\$87M
B-2	21 TAI (16 CC)	8 Years 2000 hrs	CY03: 47.4% Last 6 months: 49.4% AF Standard: 51%	\$381M
B-52	94 TAI (44 CC) AF Req: 76 TAI	41 Years 15,900 hrs	CY03: 73.3% Last 6 months: 75.7% AF Standard: 74%	\$118M

Future Improvements

Second, just as we could not clearly predict the changes that September 11th, 2001 and the Global War on Terror have made on our national security strategy or the subsequent national military strategy, we cannot define future LRS requirements with 100% certainty. As with all weapons systems since the beginning of warfare, our Air Force long-range strike capabilities will undoubtedly have to adapt and improve in order to operate in new environments and to be able to execute future national military strategies. Over the past three years, Defense Department, research and contractor

analytical organizations have completed more than 24 LRS studies, all of which have determined that a system of systems approach is required to provide the desired effects. Several of these studies focused on ballistic missile weapon systems and Common Aerospace Vehicle (CAV) development to provide an improved prompt global strike capability in the next decade. Most focused on the joint force commander's requirement to employ enhanced mass and persistence. For this, the Air Force will need to continue in its investment in the current long range strike platforms (B-52, B-1B, and B-2A) in order to improve their lethality, survivability, supportability and responsiveness.

Additionally, the Air Force Research Lab's (AFRL) Long Range Strike Platform (LRSP) study and the Institute for Defense Analysis's (IDA) study both concluded that to provide the future desired LRS capability and meet the OSD directed 2012 Long Range Strike Platform (LRSP) acquisition program start date, the Air Force needs to make Science and Technology (S&T) investments in several areas – platform concepts, weapons, and C4ISR. Doing so ensures that critical technologies supporting several concepts would be available to enable the initiation of a concept refinement phase of an LRS capability acquisition program. Their analysis showed that a single concept could not provide all of the required capabilities drove their decision to invest in the technologies supporting multiple platform concepts.

The AFRL and IDA studies also determined that the platform concepts having the maturity for a 2012 start with an affordable S&T investment were limited. They determined that the high supersonic and hypersonic technology would not be mature enough to support a 2012 program start, but recommended that the DoD should continue

to invest in hypersonic technology to provide a prompt global strike capability in the 2050 timeframe.

One of the critical enablers of LRS capabilities, all of the studies identified the importance of having a robust, networked, global Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) system that has the capability to pass target information and mission changes to theater and LRS force package elements, command and control aircraft and sensor platforms. This network-centric system will also improve force package element survivability by enabling the passing of threat information from off-board sensors to the LRS platforms. The strike package, sensor platforms, and C2 elements will also be able to pass video information using the networked C4ISR capability.

Other technologies identified that require future investment that are key to the LRS capability are dependent upon the platform concept or multiple platform concepts selected for development. Because each concept has key technologies and future capability needs are not easily defined or clearly understood, the Air Force must invest in a wide array of technologies at this point in time in order to have several viable options available to support the LRS System Design and Demonstration (SDD) acquisition phase. However, the key technologies can be grouped into 3 broad categories: platform, weapons, and crosscutting technologies. The following are the key technologies within these broad categories:

Low Speed and High Speed Reusable Platform

- Airframe Propulsion Integration
- Propulsion Systems
- Structures, Materials, and Processes
- Vehicle Subsystems

Vehicle Aerodynamics
 Weapons Integration
 CAV Thermal Protection
 Space Guidance and Control Systems

Weapons

Guidance and Control
 Light Weight Airframe/Thermal Protection
 Expendable Turbine/Scramjet
 Data links and Seekers
 Penetrating and Kinetic Energy Warheads
 Fuzing
 Submunition Deployment
 Space environment and re-entry technologies

LRS Cross Cutting

Data Fusion/Crew Systems
 Secure beyond line-of-sight voice communication and high capacity data links
 Sensors
 Simulation and Studies
 Sustainment
 Defensive Countermeasures/Low Observable Characteristics

Again, we believe that there are many avenues that must be explored in order to retain our long-term advantage in long-range strike and power projection. Pursuit of these avenues does not, however, preclude the near and mid-term requirement to be able provide a survivable, responsive, persistent, and flexible capability able to operate in any environment and able to reach any point on the globe. To ensure that we can provide these capabilities we believe that now is the time to move forward in this area.

Current Investments and the Way Ahead

Third, Air Force investment in FY05 is designed to provide a full spectrum of long-range strike capabilities to joint force commanders. In front of the full committee last week, Secretary Roche and General Jumper both illustrated how important this issue

is to the Air Force and their efforts to move out with regard to long-range strike. Methodically, we began. First, in December 2003, I opened the Long-Range Strike Summit that aimed to consolidate the findings of the numerous ongoing studies described earlier. After those findings were briefed to Air Force senior leadership, Secretary Roche and General Jumper announced that they would stand up two offices. On 11 Feb 2004, the new Long Range Strike (LRS) office led by Air Force Materiel Command (AFMC) met for the first time. The second office, an Air Combat Command (ACC)-led LRS integrated planning team (IPT) stood up in the last week of February and will participate in developing an Analysis of Alternatives (AoA) and manage possible acquisition of the LRS capability. The Air Force plans to use a portion of the \$45 million FY04 Congressional plus up to establish the LRS office. Its first priority will be to work with the ACC IPT to define the capabilities needed to provide the desired effects supporting the national military strategy by completing the Functional Capability/Needs Analysis and Functional Systems Analysis process. In the end, establishment of these new organizations and this pre-Milestone A activity signals our commitment to moving forward in this important area.

In parallel with this year's establishment of the LRS office, Air Force Research Lab (AFRL), using the Long Range Strike Platform (LRSP) recommendations, is defining the fiscal year 2006 and Future Years Defense Program (FYDP) Science and Technology (S&T) investment needed to mature selected technologies supporting multiple platform concepts. Mature technologies are needed to support the start of a LRS Systems Development and Demonstration (SDD) acquisition effort in the 2012 to 2015 timeframe. In defining the funding requirements, AFRL will leverage existing DoD and

NASA technology investments including \$190 million in FY08 and \$590 million in FY09 ear-marked to support a Long Range Strike acquisition program. Based upon the LRS platform concept selected, the SDD effort would lead to a Milestone C production decision in the 2020 to 2025 timeframe and subsequent fielding in the 2025 to 2030 timeframe.

As previously stated, the Air Force is pursuing a time-phased modernization program, investing \$612.4 million in FY05 and \$3.2 billion in the FYDP, to improve lethality, survivability, supportability, persistence, and responsiveness of the bomber fleet. Examples of these investments include:

- **B-1 (\$86.5 million in FY05)** -- Fully integrated data link (FIDL)--includes Link-16 and Beyond Line of Sight C2 Connectivity and Situational Awareness (BLOS/SAE). Block E upgrade adds mixed load weapons capability, Wind Corrected Munitions Dispenser (WCMD), JASSM integration, and ALQ-161 upgrades.
- **B-2 (\$388.4 million in FY05)** -- Center Instrument Display/Link-16 (CID/Link-16), Radar Frequency Modification (RMP), JDAM Mk-82, Low Observable improvements and Advanced Extremely High Frequency (AEHF) radio - provides BLOS/SAE. AEHF satisfies C2 connectivity requirements with US Strategic Command (STRATCOM)
- **B-52 (\$137.5 million in FY05)** -- Avionics Midlife Improvement (AMI), Electronic Countermeasures Improvement (ECMI), and Combat Network Communications Technology (CONNECT)--upgrades current avionics architecture allowing flexibility to future avionic growth capability and adds Link-16 and AEHF. Advanced weapons being fielded are JASSM. Threshold platform for WCMD-Extended Range (ER) and Miniature Air-Launched Decoy (MALD)

We believe that implementing these investment plans now will eliminate some of our deficiencies. This year's foundation will make future investments more effective and are the most fiscally responsible way to address the improvements needed to operate in the challenging environments of the future.

Changes to Investment Strategy

Fourth, as stated earlier, our projected funding levels are designed to effectively and methodically implement changes and sufficiently support the improvements required for future national military strategies. We believe that our current funding strategy supports modernization of legacy platforms as well as investments in a next generation capability. While the precise form that capability takes is being determined, we are fully funding technologies which will make the form a reality. While increases in funding above our projected levels and the realization of technological advances are not linearly connected, we fully support our robust science and technology budget.

Changes to funding for any of our long-range strike assets directly effect all of them. For instance, changes to force structure and the retirement of B-1 bombers could have devastating effects on the readiness of the current fleet, completion of modernization programs, and the implementation of our next generation capability. While 60 B-1s provide a robust supportable, lethal, and survivable fleet of 36 combat coded aircraft, attempting to return 23 jets to flight status is not possible. While we would like to fund 67 jets in accordance with Air Combat Command's requirement, an additional \$175-225 million over the FYDP may be required. We believe that bringing back more than 7 aircraft would be detrimental to the overall survivability, lethality, and supportability of the entire B-1 fleet. In fact some suggest that due to the extremely high cost (\$3.3 billion across the FYDP), fleet wide improvements and record mission capable rates that led to our success in Operation IRAQI FREEDOM may actually be reversed.

While there are many skeptics about the dividends that force structure changes pay, the fact remains that MC rates (53% versus 71.5%) and cannibalization rates (85.5 versus 55.5) have improved and the Air Force can afford more badly needed upgrades for these reduced fleets. Any changes in these programmed changes would have made these improvements exponentially more difficult to attain. Likewise, in this years budget submission there are two proposed force structure changes (one bomb squadron will be stood down and its aircraft re-coded as BAI and the retirement of ten F-117s) aimed at improving overall strike capabilities and meeting the joint force commander's wartime requirements. Again, changes in these plans will likely be detrimental to the overall long-range strike portfolio of capabilities.

Tankers and Support Aircraft

Limited overseas basing does not change our ability to conduct long range strike, but it dramatically increases the tanker support required to conduct such missions and it decreases the responsiveness and level of persistence available to the combatant commander. The cumulative effect of limited basing in all of these areas may be significant enough to delay strategic effects and/or make their cost unacceptable.

Air refueling is a critical force enabler adding flexibility in aerospace employment by creating a maneuver force capable of decisive effects. As you have heard time and again for the past three years, without tankers the Air Force would not be able to accomplish the mission of power projection.

Without tanker support during Operations ENDURING FREEDOM and IRAQI FREEDOM, our bombers would have been significantly less effective. Flying sorties

from the middle of the Indian Ocean against Taliban targets is similar to traveling from Tampa, Florida to Anchorage, Alaska. Obviously, many of US platforms could not have accomplished this mission at all, let alone have time to loiter over the battlespace without available air refuelings. Using 222 KC-135s and 35 KC-10s deployed to 17 locations, the Air Force provided fuel for USAF, USN, and coalition aircraft. Our KC-135Es did not deploy to OIF due to flight restrictions. Instead these aging aircraft performed mission here in the US in support of Operation NOBLE EAGLE and played a vital role in the air bridge that got forces from CONUS to southwest Asia. Air Force KC-135R and KC-10 tankers under USCENTCOM operational control flew 8,101 tanker sorties delivering over 475 million pounds of fuel to USAF, USN and Coalition aircraft. The capabilities of the KC-10 and KC-135 were useful force multipliers supporting Navy and Coalition probe-equipped aircraft extending range and allowing them to strike targets outside of their normal combat radius. USAF tankers dragged USN strike packages that had launched from Carriers in the Mediterranean Sea to their targets. They remained in place until after the strike when fighters would rendezvous with the tankers and be refueled enroute back to the carrier.

As the Combined Forces Air Component Commander, I depended on persistence as a key capability of the air and space forces. Tankers enabled all of the theater-range combat aircraft and exponentially increased their on-station times, their ability to respond to time-sensitive targeting, and their ability to support ground forces on the road to Baghdad. For instance, air refueling enabled F-16s stationed in the southern Gulf to reach targets deep inside Iraq. Other F-16s stationed in Kuwait saw their on-station time more than triple. Finally, the A-10, our primary Close Air Support asset, could now fly

overhead our troops for more than two hours in Iraq with tanker support, versus forty minutes without it.

As a key element in all our force projection, tomorrow's tanker force must be shaped in lock-step with any next-generation strike capability. As part of a joint effort, the Air Force's lead command on this, Air Mobility Command (AMC), in partnership with the Office of Secretary of Defense Program Analysis and Evaluation Division (OSD/PA&E), completed the Tanker Requirements Study - 2005 (TRS-05) in June of 2001. This study provided insight into air refueling requirements and the capability of the Mobility Air Forces (MAF) to meet those future requirements. The primary objective of TRS-05 was to determine the number of tanker airframes and aircrews needed to support the National Military Strategy of conducting two nearly simultaneous major theater wars (MTW) using multiple scenarios. TRS-05 identified shortfalls in both aircraft and aircrews. While the study examined potential work-arounds to mitigate some of the shortfalls, the work-arounds increased risk to the warfighter without eliminating the shortfalls.

While subsequent analyses (e.g., Quadrennial Defense Review) echoed the TRS-05 requirement, real world events such as September 11th require a new force-sizing construct. The resultant 1-4-2-1 defense strategy changes the requirements complexity and increases force structure requirements above the TRS-05 levels.

Today and in the future, the MAF is committed to provide the capability to refuel inflight assets for bomber force execution, employment, and subsequent bomber survival, recovery, and reconstitution, in all operating environments. To succeed, the follow capabilities are required:

- Capability to conduct air refueling operations in adverse weather conditions

- Capability for reduced detection from radio frequency (RF) and infrared (IR) air defensive systems
- Capability to counter RF, IR and command line-of-sight man portable air defense systems (MANPADS)
- Capability to refuel unmanned platforms
- Capability to automatically IFF identify all aircraft (friend or foe) in the vicinity
- Capability to sustain flight operations in an electromagnetic pulse (EMP) environment
- Capability to operate autonomously from austere airfields
- Capability for continuous secure communications with higher headquarters before, during and after OPLAN 8044 execution
- Capability to perform mission requirements in chemical, biological, radiological, nuclear and enhanced conventional weapons (CBNRE) environments.

To account for the current National Military Strategy and Defense Planning Scenarios, the Air Force, through AMC, and OSD/PA&E will conduct the Mobility Capabilities Study (MCS) later this year, with an anticipated completion in calendar year 2005. The MCS assessment will include sizing the required number of mobility (both airlift and air refueling) airframes and aircrews needed to support the National Defense Strategy through the Future Years Defense Program.

In addition to air refueling, long-range strike assets currently are supported by a number of Air Force assets including suppression of enemy air defense aircraft, command and control and intelligence surveillance, and reconnaissance platforms, and electronic warfare or jamming aircraft. From EC-130H Compass Call and F-16CJ Block 50/52 HARM shooters to externally carried jamming pods we must examine the survivability that this system creates. In the future, we will have to examine how to optimize the technological advances of long-range platforms with these support systems. One example is the conversion of 16 B-52s to conduct a stand-off jamming role. Beginning in October 2004, the Air Force will begin program management activity work

on this and has requested \$57.5 million in FY05 and approximately \$500 million over the FYDP to make this a reality.

Closing

Finally, I want to thank you, Mr Chairman for holding this hearing today. The men and women stationed around the globe who call long-range strike their primary mission and performed so brilliantly in OEF and OIF appreciate your attention and efforts in this area. Last year, those same airmen and I applauded the HASC reorganization that created the Projection Forces subcommittee signaling this mission as one of importance and permanence. Thank you Mr Chairman and Congressman Taylor for the opportunity to discuss this critical issue and I welcome the chance to answer any questions you or the committee may have.

NOT FOR PUBLICATION UNTIL RELEASED BY THE
HOUSE ARMED SERVICES COMMITTEE
PROJECTION FORCES SUBCOMMITTEE

STATEMENT OF

RADM MARK P. FITZGERALD
DEPUTY CHIEF OF NAVAL OPERATIONS
DIRECTOR, AIR WARFARE

BEFORE THE
PROJECTION FORCES SUBCOMMITTEE
OF THE
HOUSE ARMED SERVICES COMMITTEE
ON

NAVY CAPABILITIES FOR CONDUCTING CONVENTIONAL LONG RANGE STRIKE

MARCH 3, 2004

NOT FOR PUBLICATION UNTIL RELEASED BY THE
HOUSE ARMED SERVICES COMMITTEE
PROJECTION FORCES SUBCOMMITTEE

Mr. Chairman, distinguished members of the Projection Forces Subcommittee, thank you for the opportunity to discuss how naval forces contribute to our national long range strike capabilities. Developing capabilities to sustain access forward is a primary emphasis for the U.S. Navy. Your Navy is on call, forward deployed, surgeable, standing ready to project power every day, around the clock, around the world.

Why Navy Deep Strike?

As a global power in a maritime world, the oceans are the “Great Commons” that connect America to the world. We must be free to operate in the world’s oceans so that our vital national interests are protected. Our Navy-Marine Corps team’s core mission is control of the seas, maintaining the free flow of commerce throughout the world. Over 80% of the world’s population lives within 200 nautical miles of the sea. 99.7% by volume of all international trade travels by sea and over 32% of the world’s maritime trade in oil travels through one vital choke point, the Strait of Hormuz. Should we fail in this vital endeavor, the world economy would be gravely impacted and our way of life would be altered immeasurably. Therefore, our ready forward naval forces are the key joint enabling force, as well as a decisive force, particularly in areas that deny basing rights or access to our Army and Air forces. Naval power projection forces are critical members of the joint power projection deep strike team providing speed of response to an emerging crisis from forces that can be immediately employed from within a region by national policy makers, without host nation restrictions, even as we might begin to employ others toward it.

Nowhere has this core capability been better demonstrated than in the events immediately subsequent to September 11. On that day, USS ENTERPRISE was returning from deployment when satellite television provided the first pictures of the attack on our soil. Within minutes, ENTERPRISE reversed course and proceeded north at flank speed. By the next morning, ENTERPRISE was prepared to conduct deep strike missions within Afghanistan. The “Big E” was quickly joined by USS CARL VINSON Battle Group, which steamed at high speed to the scene, her strike aircraft and Tomahawk cruise missiles at the ready. Other naval forces, including USS PELELIU’s Amphibious Ready Group, en route from Australia, and USS KITTY HAWK, destined to serve as an Afloat Forward Staging Base for joint special operations forces, got underway from Japan.

As Commander of the THEODORE ROOSEVELT Battle Group during Operation Enduring Freedom, I truly appreciate how our Navy/Marine Corps’ team provides our nation with unparalleled asymmetric advantages resident in the Sea Basing of our Naval Forces. The inherent mobility, security, and flexibility of naval forces which is enhanced by Sea Basing the joint force, reduces operational dependence upon fixed and vulnerable land bases, and offers joint force commanders increased freedom of action to deploy, employ, and sustain forces. Navy carrier aircraft ranged up to 800 nautical miles into Afghanistan twenty-four hours a day for over eight months in an unprecedented sea based operation against the Taliban. Over 80% of those sorties were launched without the aircrew knowing where the target was located. As noted, the flexibility of our Naval Forces included three aircraft carriers projecting deep strike power into Afghanistan,

Marines and Seal forces inserting deep behind enemy lines, and the USS KITTY HAWK acting as an Afloat Forward Staging Base for the basing of Army and Air Force special operations forces that were utilized to conduct long range strike missions into Afghanistan.

Navy carrier-based aircraft, Marine Expeditionary Units, Seals, Special Operations personnel, Seabee Construction personnel, and Tomahawk cruise missiles led the Joint force team in the early stages of the war. At times, Navy Special Warfare (NSW) forces constituted the majority of the unconventional warriors in central Asia. Forward deployed Naval forces opened the door for our Coalition Force in the early stages of the war, and throughout OEF comprised the vast majority of striking power available to the Coalition Commander.

Sea Basing will expand on capabilities demonstrated in OEF and OIF by providing greater dynamic access, speed of response, flexibility, and persistent sustainment capabilities necessary to execute combat operations ashore. By exploiting the maneuver space provided by the sea to conduct joint operations at the time and place of our choosing, we will better be able to influence events in the littorals or hundreds of miles inland.

Ship to Objective Maneuver (STOM), will project the Expeditionary Strike Group's combined arms assault force from ships at sea directly against operational objectives- some of which may be located far inland. This represents the application of enduring

concepts from the Marine Corps transformational “Operational Maneuver from the Sea” doctrine. Future Marine Forces will be able to maneuver in tactical formation from the moment they depart the enhanced sea base, a series of stable-in-theater afloat staging centers located outside the Joint operating area, until they reach their key objectives. STOM will reduce Naval Forces’ historic beachhead vulnerability, since the sea base will provide the primary support for Marine operations. In this way, STOM greatly increases Naval expeditionary forces’ tactical flexibility, capacity for increased operational tempo and ability to project power deep inland.

Combat operations from Desert Storm to Iraqi Freedom provide further insight into the Navy-Marine Corps team’s capabilities as key players in joint, precise, long range strike operations. During Operation Iraqi Freedom, Navy Tomahawk missiles were launched from the Mediterranean and Red Sea as well as the Persian Gulf. Navy and Marine Corps’ strike aircraft (both active and reserve) utilized both organic and non-organic tanking to fly missions at extremely long range, providing unprecedented persistence and precision to fast moving ground forces. The surveillance and reconnaissance capability provided by this distributed air power, in addition to the precision weapons delivered, enabled the ground scheme of maneuver.

During OIF, our nation deployed joint combat forces across the globe with greater speed and agility than we have ever done in the past. The Navy-Marine Corps’ team delivered more than 60,000 combat-ready Marines ashore in Kuwait in 30 days, and seven carrier

strike groups to support simultaneous global operations. Those Marines then projected power at great distances from the sea in their record drive to Baghdad.

Today's Navy Long Range Strike

The Navy and Marine Corps' continued success in providing long-range precision strike is due to determined investment in flexible, multi-role platforms with ever-improving capabilities. The development of F/A-18 and F-14 strike fighters and Tomahawk cruise missile are evidence of this foresight. Furthermore, development of joint, precise munitions, such as the Joint Direct Attack Munition and Joint Standoff Weapon, have significantly increased lethality, accuracy, and aim point prosecution while reducing collateral damage. Today's metric is "targets per aircraft" vice "aircraft per target."

Our deep strike forces, now and in the future, will be organized into a flexible force structure composed of both Carrier Strike Groups (CSGs) and Expeditionary Strike Groups (ESGs). Our current CSGs include a full Airwing, along with surface and subsurface Tomahawk platforms, both capable of long-range precision strike. ESGs, consisting of an Amphibious Ready Group and augmented with strike capable SSNs, destroyers and cruisers, are capable of projecting power far inland.

F/A-18E/F

Truly multi-mission and combat proven, the F/A-18E/F is a significant step forward in improving the survivability and strike capability of the carrier air wing. The Super Hornet provides a 40 percent increase in combat radius, 50 percent increase in endurance,

and 25 percent increase in weapons payload over our older Hornets. Three Super Hornet squadrons deployed during OIF as Fleet transition of the F/A-18E/F continues. The latest squadron to stand up is now based with the carrier air wing forward deployed in Japan.

The Super Hornet has used a spiral development approach to incorporate new technologies, such as the Advanced Electronically Scanned Antenna (AESA) radar, Joint Helmet Mounted Cueing System, Advanced Tactical Forward Looking Infra-Red (ATFLIR), Shared Reconnaissance Pod System (SHARP), and Multifunctional Information Distribution System (MIDS) data link.

EA-6B

This is the only Airborne Electronic Attack platform in the United States' inventory and a key enabler to joint long-range strike capability. The EA-6B Prowler provides electronic attack support to U.S. and Coalition forces worldwide. In Operation Enduring Freedom (OEF), Prowlers were primarily focused on communications jamming in direct support of conventional and special operations ground forces. Their disruption of enemy command and control was instrumental in the many successes enjoyed by U.S. forces in Afghanistan. In the early stages of Operation Iraqi Freedom (OIF), Navy Prowlers provided air defense suppression for both conventional and stealth aircraft, quickly shifting to a communications electronic attack focus once air defenses were defeated. The Prowler's flexibility in OIF provided the coalition with precise, tailored, and timely non-kinetic fires that disrupted, confused and disabled the enemy, enabling the swift defeat of the Hussein regime.

Surface Combatants

The TICONDEROGA (CG 47) class guided missile cruisers and ARLEIGH BURKE (DDG 51) guided missile destroyers operate independently or as part of CSGs and ESGs. 22 CGs and all DDGs are equipped with the Mk 41 Vertical Launching System (VLS), giving them a significant surface fire capability with the Tomahawk Land-Attack cruise Missile (TLAM). Over 1900 Tomahawks have been fired in anger since Operation Desert Storm in 1991. The culmination of the deep strike capability available from surface ships was most recently demonstrated during Operation Iraqi Freedom when 21 CGs and DDGs launched over 800 Tomahawks (almost half in one day), contributing significantly to the "Shock and Awe" campaign.

SSN

Of the five military domains (land, sea surface, undersea, atmosphere and space), undersea operations are the least visible and therefore the stealthiest. During Operation Iraqi Freedom, the Submarine Force worldwide presence increased from the normal 10 to a high of 16, 12 of which were in the CENTCOM AOR. Their stealth, endurance, agility, and firepower provided the Combatant Commanders with unlocatable, close-in, persistent presence in support of multiple missions which included firing one-third of all Tomahawks launched in both Operation Enduring Freedom and Operation Iraqi Freedom.

Tomorrow's Deep Strike Platforms

The foresight required to develop today's very successful sea based deep strike platforms is once again at work. CVN-21, DDX, SSGN, and JSF are all part of the Navy's vision for executing long-range strike far into the future.

CVN 21

As the replacement for the NIMITZ Class nuclear aircraft carrier, CVN 21 will be the centerpiece of tomorrow's Carrier Strike Groups and a contributor to the future Expeditionary Strike Force, as envisioned in Sea Power 21. CVN 21 is a nuclear powered ship optimized for high sortie strike operations and capable of accepting technologies of the future including directed energy weapons and high bandwidth communications. This new aircraft carrier will increase the sortie generation rate by 20 percent, increase survivability to better handle future threats and will have a maintenance cycle that will support an increase of up to 25 percent in operational availability. CVN 21 will be the centerpiece of our nation's long range striking power with enhancements such as a future air wing that will include the Joint Strike Fighter and Joint Unmanned Combat Air Systems. CVN 21's transformational command centers will combine the power of FORCEnet and flexible open system architecture to support simultaneous multiple missions, including integrated strike planning, joint/coalition operations and Special Warfare missions. The CVN 21 based strike group will play a major role in Sea Shield protecting United States' interests, while deterring enemies and reassuring allies,

and providing the United States the capability to quickly project combat power anywhere in the world, independent of land based support.

SSGN

Our SSGN will provide covert conventional strike platforms capable of carrying 154 Tomahawk missiles. The SSGN will also have the capacity and capability to support Special Operations Forces for an extended period, providing clandestine insertion and retrieval by lockout chamber, dry deck shelters or the Advanced Seal Delivery System. SSGN's will be arrayed with a variety of unmanned vehicles to enhance the joint force commander's knowledge of the battle space. The large capacity of these hulls will enable us to leverage future payloads and sensors for years to come. We expect our first SSGN to be operational in 2007.

Future Surface Combatants

DD(X) is a *multi-mission surface* combatant that brings with it the capability to provide volume fires and precision strike in any theater. DD(X) is a key enabler for movement of Joint Forces ashore and Ship to Objective Maneuver. DD(X) will test and field advanced technologies including: an Advanced Vertical Launch System, Tumblehome Hull (reduced electronic, acoustic, magnetic and infrared signatures), and two 155MM Advanced Gun Systems (capable of firing the Long Range Land Attack Projectile out to 100NM). It will use stealth, reach, speed and lethality to provide a time sensitive range of offensive options to the naval, joint or combined commander.

JSF

The Joint Strike Fighter, with a mission radius of 762 miles in the CVTOL and 400 in the STOVL variant, enhances our precision deep strike, battlefield surveillance, reconnaissance, and persistence capabilities with unprecedented stealth and range as part of the family of tri-service, next-generation strike aircraft. It will maximize joint and coalition commonality and technological superiority while minimizing life cycle cost. The JSF replaces the Navy's F-18A/C variants and the Marine Corps' AV-8B Harrier and F/A-18A/C/D aircraft while complementing the Navy's F/A-18E/F Super Hornet. The JSF, the multimission strike fighter of the future, remains vital, and the Navy is extremely committed to it.

EA-18G

The EA-18G will replace the EA-6B Prowler in carrier based Electronic Attack aircraft squadrons and represents a cost effective means of legacy aircraft replacement.

Leveraging existing production capabilities at Boeing and Northrop Grumman, the Navy is using the F/A-18E/F multi-year contract to buy an additional quantity of 'F' Aircraft which will be converted to EA-18Gs. Northrop Grumman's Improved Capabilities (ICAP)-III Airborne Electronic Attack (AEA) system – currently in production for the EA-6B – will be installed in F/A-18F airframes to produce the EA-18G. This allows us to deliver a quantum leap in Airborne Electronic Attack capability at reduced cost and in the shortest possible timeframe. The EA-18G will enter operational service in FY-09.

E-2 Advanced Hawkeye

A critical enabler of transformational intelligence, surveillance and reconnaissance (ISR), the E-2 Advanced Hawkeye (AHE) program will provide a robust overland capability against current and future cruise missile-type targets, as well as a more precise and longer range air picture. AHE will modernize the E-2 weapons system by replacing the current analog radar and other system components with digital technology. AHE ensures open ocean and overland ISR capability by adding transformational surveillance as well as theater air and missile defense capabilities.

V-22

The FY 2005 budget includes \$918 million for eight MV-22s and \$304 million for continued testing and evaluation. The V-22 Osprey program resumed flight-testing in

May 2002, flying in excess of 1100 hours. Very successful flight-testing has continued on high rate of descent flight envelope expansion and icing system development. The V-22 is satisfying the threshold levels for all its key performance parameters to include its reliability and maintainability metrics. In July 2003, OSD directed the Services to reduce the aircraft procurement ramp to no greater than 50 percent, and to use the savings accrued from the production adjustments for reinvestment into program interoperability improvements and cost reduction initiatives.

Deep Strike Weapons

Tactical Tomahawk

The FY 2005 Budget requests \$256.2M for 293 missiles, an increase of \$64 million and 75 missiles over the amount projected for FY 2005 in the FY 2004 budget. Tactical Tomahawk represents a tremendous improvement over the successful Block III Tomahawk cruise missile. The state-of-the-art components allow reduced response time, multiple pre-planned outcomes, improved lethality and navigation improvements. The Full Rate Production decision is on track for June 2004. Additionally, we are in the final stages of our second remanufacture program; converting all available older Tomahawk airframes to the latest Block III configuration. This effort will be complete in May of this year and will yield an additional 454 missiles.

JASSM

The FY 2005 budget requests \$27.0M for RDT&E for continued integration of the JASSM air launched cruise missile on the F/A-18E/F aircraft. Since this weapon provides the longest standoff of all air to ground precision weapons, its successful entry into the F/A-18E/F inventory enables standoff operations beyond enemy defenses as well as extending the reach of the Hornet in deep strike attack.

JSOW

JSOW is a low cost, survivable, air to ground weapon for attacking from outside enemy point defenses during day or night and adverse weather conditions. Three JSOW variants use a common air vehicle for dispensing munitions or target penetration warhead. The three variants, JSOW-A, B, and C, are used for soft area interdiction, massed combat vehicles, and hard targets respectively. Withdrawal of the USAF from the JSOW program increases unit cost and reduces the number of weapons procured.

Deep Strike Concepts

The Navy is committed to using its deep strike assets in transformational ways that will provide greater firepower and flexibility to the Combatant Commander. The Fleet Response Plan, (FRP), is a key element in providing rapid, surgable combat power to the fight at the right time. The FRP resets the force in a way that will allow us to surge about 50 percent more combat power on short notice. It enables the Navy to consistently and

quickly deliver six Carrier Strike Groups (CSGs), plus two additional CSGs in 90 days or less. This FRP capability is commonly known as six plus two.

Tactical Air Integration (TAI) is another of these transformational changes and has been referred to by OSD as *the* model transformational plan. TAI is an innovative way for the Navy and Marine Corps to develop interchangeable Strike Fighter units that provide for enhanced operability and greater combat effectiveness to both Carrier Strike and Expeditionary Warfare Groups.

Many other new operational concepts and systems are being developed by the Navy and Marine Corps in order to enhance our ability to influence events on the modern multidimensional battlefield. Clearly, this is not an inclusive list of our transformational initiatives: merely a few illustrative examples. I am excited about the opportunities that exist when we think creatively - indeed transformationally - about the challenges ahead.

Summary

Your Navy-Marine Corps' team is a critical part of our joint long-range deep strike force. Constantly seeking better ways to influence the enemy in the far corners of the earth in support of National policy, your Navy is ready today and will be ready in the future. That's the power of being there—a timely application of the full spectrum of effects that provides the power to shape regions of interest, securing access for our economic,

political and military interests overseas. Thank you for this opportunity to speak with you today.

NOT FOR PUBLICATION
UNTIL RELEASED BY
HOUSE ARMED SERVICES COMMITTEE

STATEMENT OF
CHRISTOPHER BOLKCOM
SPECIALIST IN NATIONAL DEFENCE
CONGRESSIONAL RESEARCH SERVICE
BEFORE THE
HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON PROJECTION FORCES
HEARING ON CONVENTIONAL LONG-RANGE STRIKE OPERATIONS
MARCH 3, 2004

NOT FOR PUBLICATION
UNTIL RELEASED BY
HOUSE ARMED SERVICES COMMITTEE

Mr. Chairman, distinguished members of the committee, thank you for inviting me to speak with you today about long range conventional strike.

As requested, this testimony will address potential oversight issues and investment options in connection with conventional long-range strike capabilities, with a focus on Air Force long-range bombers, Air Force theater-range aircraft, Navy carrier-based strike aircraft, and Air Force and Navy support aircraft.

At the broadest level, three oversight questions frame the debate on which investments to make to maintain and improve DoD's conventional long-range strike capabilities in an era of limited and uncertain access to land bases in relation to the platforms mentioned above:

- How many, and what kind of aircraft are required to achieve and maintain air dominance?
- How many, and what kind of aircraft are required to conduct attacks against distant targets?
- What kind of support aircraft are required to enable these two missions?

After providing a short background, I will address each of these questions in turn.

Background: Access to forward bases and implications for investment choices

Conventional wisdom suggests that the DoD may increasingly find itself facing conflicts in distant theaters with limited or no forward bases, but there is no consensus whether this will truly be the case, or to what extent. Many believe that pursuing the Global War on Terrorism will likely make distant, limited forward bases the most common scenario. While the United States enjoyed access to well established military bases and other resources in Europe and North East Asia during the Cold War, it is feared that forward bases may be lacking in emerging threat areas. Therefore, some argue that a potential lack of forward bases should be strongly considered as part of weapons procurement strategies. If bases are lacking in the future, certain air combat weapon characteristics will be more valuable than others: long range, fuel efficiency, long-loiter time, large payloads, and the ability to operate from short or austere airfields.

Some say that the recent wars in Afghanistan and Iraq demonstrate how important forward basing is to air combat operations, and strengthens arguments in support of procuring weapon systems that are more effective in basing-limited scenarios. In Afghanistan, these observers say, the lack of regional bases limited the effectiveness of land-based tactical combat aircraft, and that Air Force long range bombers and Navy and Marine Corps carrier-based aircraft dropped most of the bombs and conducted most of the combat sorties. The inability to access, or fully access bases in Turkey and Saudi Arabia complicated U.S. air operations in the Iraq war.

Other observers disagree, saying that concerns about future deployability and access to forward airbases have been exaggerated. The wars in Afghanistan and Iraq prove a contrary point, these observers say, that the U.S. military is very adaptable. Rather than invest heavily in rapid deployability or long range systems, the military should continue to invest in a mix of long and short range capabilities to ensure future flexibility. In Iraq, coalition air forces adapted well to mitigate basing challenges. For instance, the Air Force teamed up with the Army to execute the largest air drop in recent memory. Special operations forces seized and secured airbases within Iraqi territory that were quickly exploited by coalition air forces to conduct combat air operations against Saddam's army. Also, these observers say, because the United States tends to fight wars abroad, we have the

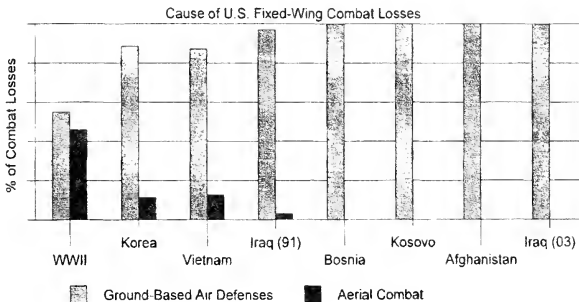
advantage of preparing and executing the war on our time line. Much of the investment in long range or rapid deployment is lost, some say, because the war doesn't start until we are ready. Those concerned about access to forward bases had argued that the United States was lucky in the first Gulf War, because Saddam erred, and allowed us six months to build up a force in the region. Some said that Saddam would never again give us that much time to build up. The recent war in Iraq disproved that theory.

Resolving this debate, or at least bounding it would prove useful for congressional oversight of long-range conventional strike systems. While the prudent planner may wish to invest to cope with the worst case – distant conflicts with little or no forward basing, this prudence would come at a cost. Those programs and platforms that would facilitate U.S. dominance in these scenarios would likely be more expensive than programs and platforms that could exploit forward basing.

Question 1: What kind, and how many, and what kind of aircraft are required to achieve and maintain air dominance?

Tomorrow's air forces will be called upon to achieve air dominance by eliminating or negating both an enemy's air-based, and ground-based air defenses. Many believe that while both these types of defenses were equally threatening in the past, U.S. aircraft will be increasingly challenged by ground-based defenses, while the threat posed by air-based defenses (combat aircraft) will either wane, or at best, hold steady. From this perspective, today's investments in air dominance would likely focus on ground-based defenses such as long-range surface-to-air missiles (SAMs) while considering enemy aircraft as a lesser included case.

There appear to be very few countries today capable of challenging U.S. air forces in air-to-air combat. Since Operation Desert Storm, 100 percent of all U.S. combat aircraft losses have been due to ground-based air defenses. Historically, the percentage of U.S. combat losses due to aerial combat has steadily declined and the percentage of losses due to enemy air defenses has steadily risen. In World War II, U.S. air combat losses were split almost evenly between aerial combat (46%) and air defenses (54%). By the Korean and Vietnam wars however, combat losses due to enemy air defenses had risen to approximately 90% and aerial combat losses had dropped to approximately 10 percent.



Another reason that addressing enemy air defenses may be of growing importance, is that emerging air defense technologies and tactics may prove more threatening and more difficult to counter than current systems. The Air Force frequently expresses concern over several interrelated developments in enemy air defenses: the emergence and proliferation of a new generation of Russian SAMs, and the application of new technologies, either in conjunction with these or with other air defense elements.

Russian SA-10 and SA-12 SAMs were fielded for the first time in the 1980s. These “double digit” SAMs are a concern for military planners due to their mobility, long range, high altitude, advanced missile guidance, and sensitive radars. The Russian SA-20, still under development, has been likened to the U.S. *Patriot* PAC-2 missile, but with an even longer range, and a radar that is very effective in detecting stealthy aircraft. Military planners are concerned that a country with only a handful of these SAMs could effectively challenge U.S. military air operations by threatening aircraft and disrupting operations from great distances.

A variety of new technologies and military systems could exacerbate the “double digit” SAM challenge. First, commercial information and communications technologies are enabling adversaries to better network the elements of their air defense systems. This allows them to disperse radars, SAM launchers and other associated platforms throughout the battlespace, and to share targeting information among launchers. This, in turn, suggests that radars may be used less frequently and for shorter periods of time, complicating efforts to avoid or suppress them. Second, terminal defenses are being marketed by a number of international defense companies. These radar-guided Gatling guns are designed to protect “double digit” SAMs or other high value air defense assets. These systems could prove quite effective in shooting down missiles aimed at enemy air defenses. Third, Russia and other countries have developed and are selling GPS jammers. Over varying distances, these low-watt jammers may degrade the GPS guidance signals used by many U.S. precision guided munitions (PGMs) to augment inertial guidance systems, reducing their accuracy.

In sum, it can be argued persuasively that future challenges to air dominance will likely come from ground-based air defenses. Dominating aerial combat in the future will likely remain a lesser included case.

The Air Force’s plan for addressing these potentially distant and pernicious air defenses is by procuring at least 278 F/A-22 Raptors and using them in combination with the B-2 bomber as part of a Global Strike Task Force. Air Force leaders say that only these stealthy and high performance aircraft will be able to survive tomorrow’s high threat environments, and “kick down the door” (in the Air Force parlance) by destroying the most threatening enemy air defenses. This will enable “persistence forces” such as the Joint Strike Fighter and other bombers to conduct their missions in relative safety. F/A-22s would also defeat or suppress the enemy’s air force, if it chose to fight.

Some observers argue that the historical record, and emerging trends, suggest that the Air Force does not need to invest in very sophisticated and very expensive platforms, such as the F/A-22, to achieve air dominance in the future. Those who challenge the Air Force plans make three general arguments.

The first argument is that the United States is very good today at achieving air dominance, and does not need an aircraft as advanced, sophisticated, and expensive as the F/A-22 for this mission. As the table below indicates, over the past 50 years DoD’s air forces have established an extremely

impressive track record. Since Operation Desert Storm, in particular, the services' have conducted air operations with impunity. Some assert that aircraft more modest than the F/A-22, such as the JSF or the F/A-18E/F, are more than adequate to continue this trend. Others argue that upgrades to the F-15 and F-16 would suffice to guarantee U.S. air dominance for many years. Navy strike aircraft could very well be the only aircraft able to achieve air dominance in future, distant scenarios. However, the Navy doesn't plan to procure an aircraft as advanced and costly as the F/A-22, which indicates, F/A-22 opponents say, that such capabilities are not required. Two hundred and fifty eight million dollars, opponents may argue, is a lot of money to spend on a "wild weasel" aircraft.¹

Estimates of Fixed-Wing Combat Aircraft Losses

Conflict	Combat Sorties	Total Combat Losses*	Attrition Rate
World War II ^b	2,498,283	19,030	0.76%
Korea ^c	591,693	1,253	0.2%
Vietnam ^d (AF data only)	219,407	1,437	0.65%
Desert Storm ^e	68,150	33	0.04%
Bosnia ^f	30,000	3	0.01%
Kosovo ^g	21,111	2	0.009%
Northern/Southern Watch ^h	268,000	0	0.0%
Afghanistan ⁱ	>10,000	0	0.0%
Operation Iraqi Freedom ^j	20,733	1	0.004%

* Other losses, either due to pilot error, accident, or unknown enemy action not included

^b *Army Air Force Statistical Digest: World War II*. Prepared by the Office of Statistical Control. December 1945. p220, Table IIB. *Naval Aviation Combat Statistics. World War II*. Air Branch. Office of Naval Intelligence, Office of the Chief of Naval Operations. Washington, DC. 17 June 1946. p 51-59. Greene, Terrell. "Surviving Modern Air Defenses." *Aerospace America*. American Institute of Aeronautics and Astronautics. August 1986. p. 14.

^c Robert Futrell. *The United States Air Force In Korea*. Office of Air Force History. US Air Force. Washington, DC. 1983. p.689-692.

^d Thompson, Wayne. *To Hanoi and Back: The USAF and North Vietnam, 1966-1973*. Air Force History and Museums Program. USAF. 2000. p. 304, 311.

^e *Gulf War Air Power Survey*. Volume V: Statistical Compendium and Chronology. Washington, DC 1993. p. 232, 641. US and coalition partners.

^f John Tirpak. The NATO Way of War. *Air Force Magazine*. December 1999. p. 24. Figures include coalition combat sorties and losses.

^g Correspondence from Lt Gen. C.W. Fulford, (USMC) Director, Joint Staff to Mr. Daniel Mulhollan, Director, Congressional Research Service. October 19, 1999.

^h Gen Walter Buchanan, *Air Force Current Operations*. Briefing to Congressional Air Power Caucus. Bolling AFB. March 12, 2001. According to USCENTCOM Press Release (8/10/01) Iraq has conducted over 1,000 attacks against U.S. and Allied aircraft since December 1998.

ⁱ Nathan Hodge. "In Tons, Air Force Drops Twice the Bombs the Navy Does." *Defense Week*. December 17, 2001.

^j *Operation Iraqi Freedom – By the Numbers*. Assessment and Analysis Division. USCENTAF, LtGen Michael Moseley, Commander. April 30, 2003.

¹ Wild Weasel was nickname of the Air Force's predominant Suppression of Enemy Air Defense aircraft, the F-4G.

A second argument opponents make against the Air Force's plan to invest in the F/A-22 / B-2 force is that the proliferation of sophisticated Russian double digit SAMs has not occurred at the rate that some predicted, and may not spread much further. Despite being on the market for over 20 years, Russia reportedly has only managed to sell double digit SAMs to five other countries (Bulgaria, China, Czech Republic, Germany, and Greece), three of which were Soviet client states at the time of the sale.² While these weapons are clearly dangerous, they are also expensive, and require extensive training to operate effectively, some argue. This has arguably slowed the proliferation of these systems, and may also do so in the future. Russia has had difficulty selling double digit SAMs, some argue, failing to sell SA-10 and SA-12 SAMs to Chile, Egypt, Hungary, Iran, Kuwait, Serbia, South Korea, Syria, and Turkey. These countries have opted instead to purchase either U.S. SAMs, or more modest air defense systems.

A final argument, that some make against heavy investments in the F/A-22 for future air dominance, is that the Raptor is not as well suited for this role as the Air Force contends. The F/A-22's low radar cross section, its aerodynamic maneuverability, powerful radar, and super-cruise capability are all impressive attributes, opponents concede. However, the Raptor's 540-nautical mile un-refueled combat radius dictates that it operate from forward bases. Also, the F/A-22 is capable of carrying internally only two bombs (1,000 Joint Direct Attack Munitions, or JDAM) in the current inventory. The F/A-22 is projected to carry eight Small Diameter Bombs (SDB) internally, but that weapon is still under development.

Those opposed to investing heavily in the F/A-22 as the Air Force's primary future air dominance asset may argue in favor of alternative investments. Examples of other investments that could combine to offer satisfactory air dominance capabilities more affordably than the F/A-22, according to some observers, might include cruise missiles and other stand-off munitions, the short-take off and vertical landing (STOVL) variant of the JSF, unmanned combat aerial vehicles (UCAVs), and increased emphasis on naval strike aviation. Like the F/A-22, these investments would have strengths and weaknesses. Cruise missiles are relatively expensive and most effective against stationary targets.³ They do not risk a pilot, are survivable, and are increasingly able to attack re-locatable targets. The STOVL JSF does not enjoy an overall radar cross section as low as the F/A-22's, and it also requires forward basing. However, it will have a larger payload, and its longer range and ability to use short runways would enable it to use forward bases that the F/A-22 could not, some argue. UCAVs, while still under development, are projected to be much cheaper than the Raptor, survivable, and like cruise missiles, will not risk a pilot's life. Tomorrow's naval aviation is not projected to be as survivable as the F/A-22, but will carry larger payloads, and will not encounter the same basing problems. Also, EA-18G radar jamming aircraft may make tomorrow's Navy strike fighters adequately survivable, say F/A-22 opponents.

Question 2: How many, and what kind of aircraft are required to conduct attacks against distant targets?

Many argue that, in an era of threatened access to forward basing, DoD should be placing a greater emphasis on long range aircraft than it currently does. Long range aircraft, in this context,

² *World Missiles Briefing*. Teal Group, Inc. February 2003.

³ Combat aircraft and bombers are more expensive than cruise missiles, but they can be used for many years, often decades, and drop relatively inexpensive weapons on thousands of targets. While a long-range cruise missile may cost 1/50th of the fly away cost of a combat aircraft, it can only be used once.

could include either long-range Air Force bombers, or Navy aircraft, which, by virtue of operating from aircraft carriers, can strike targets long distances from the United States and frequently deep inside enemy territory regardless of in-theater basing considerations.

Long-Range Bombers

Long-range B-1, B-52, and B-2 bombers played a significant role in the Iraq war, as they did in the war in Afghanistan in 2001-2002. In both conflicts, relatively small numbers of bombers dropped large numbers of precision-guided bombs and traditional unguided bombs, destroying many enemy ground targets, and were able to loiter over the battlefield for extended periods of time, which made them readily available for attacking so-called time-sensitive targets – targets that emerge suddenly and remain susceptible to attack for only short periods of time.

The performance of long-range bombers in the Iraq war and the war in Afghanistan may influence a long-simmering debate on the balance of funding for bomber programs vs. tactical aircraft. Specific questions relating to this debate include the following:

- What is the best mix of long-range bombers and shorter range tactical combat aircraft?
- Should bombers be emphasized more in the overall structure of the Air Force?
- Is DoD shortchanging bomber modernization to finance its tactical combat aircraft programs?
- Should planned early retirements of B-1s be slowed, or even reversed?⁴
- Should the Air Force implement a proposal it is now considering to replace the engines on its B-52s?
- Should the B-2 production line be re-opened?

Inventory

How many bombers does the Air Force need? How many will it need in the future? The Air Force currently maintains 165 long-range bombers, of which 96 are combat ready. It plans to reduce the number of B-1s to 60, although some Members of Congress oppose this consolidation. Likewise, DoD has sought to cut 18 B-52s from the fleet, but has met with resistance from Congress.

Inventory, Status, and Age of Air Force Bombers

	B-1	B-2	B-52	Total
Active Inventory	60*	21	84	165
Reserve/Back-up	6*	0	9	15
Combat Ready	36	16	44	96
Average Age	15.2	8.1	40.8	—

Source: *USAF*

* These numbers may change due to a provision in the FY04 Defense Authorization Act.

⁴Many bomber supporters argue that in light of the B-1's contributions in the Iraq war and the war in Afghanistan, B-1 retirements should be truncated so as to maintain a force of about 70 B-1s.

Even prior to the recent Iraq war, bomber supporters argued that programs for modernizing the bomber force are underfunded relative to tactical aircraft programs in DoD budgets,⁵ that DoD's plan to retire certain B-1 bombers early is unwise,⁶ and that the current DoD plan for developing a next-generation bomber to replace the aging bombers in the current fleet is not sufficiently aggressive.⁷ Supporters of current DoD plans argued that the force-structure and modernization needs of the bomber force are properly reflected in DoD planning and budgeting.

Bomber advocates, including some Members of Congress, contend that more bombers are needed given the expanded roles of these aircraft in recent conflicts and the possibility that the United States will be denied access to overseas bases in the future. In particular, some in Congress have argued for re-opening production of the B-2 to augment the bomber fleet and improve long-range penetration capabilities.

The Air Force and DoD, however, remain opposed to expanding the bomber fleet and continue to press for cuts in the numbers of B-1s and B-52s. The Air Force contends that the current number of combat-ready bombers is adequate for current and projected needs and that other needs are more pressing than expanding the bomber force. Air Force Chief of Staff John Jumper, when asked if today's bomber fleet is sufficient for future challenges, replied: "There's nothing I've seen that informs me we don't have enough bombers."⁸

The Air Force contends that the current bomber force is sufficient because bombers today are vastly more capable than in the past. Where previously several bombers and scores of bombs were required to eliminate a single target, today a single bomber can reliably destroy a dozen or more targets using precision weapons. Thus the Air Force and others turn around the argument that increased capabilities have increased demand for bombers to reason that increased capabilities mean fewer bombers are needed. The Air Force is developing smaller and more precise weapons that will enable bombers and other aircraft to attack more targets with great accuracy. A 500 lb. version of the JDAM and the 250 lb. Small Diameter Bomb (SDB) are expected to greatly increase the capabilities of existing bombers in coming years, and even smaller weapons are planned. Improved accuracy, it is hoped, will give these smaller munitions the same destructive power as today's larger, less accurate weapons.

Today the B-2 carries sixteen 2,000 lb. JDAMs, but soon it will carry an estimated eighty 500 lb. JDAMs, which are scheduled to debut in 2004. General Jumper believes these new weapons will reduce the number of bombers needed: "Ten B-2 bombers with 90 weapons each will take care of

⁵For decades, DoD funding levels for tactical combat aircraft have been much greater than funding levels for bombers. In FY05, for example, DoD is requesting \$341 million in bomber procurement funding and \$100 billion in funding for tactical aviation procurement. This is approximately 276 times as much money. The request for FY04 was almost identical (U.S. Department of Defense. Comptroller. *Program Acquisition Costs by Weapon System*. [Department of Defense Budget for Fiscal Years 2004/2005, February 2003, and Department of Defense Budget for Fiscal Year 2005, February 2004.])

⁶In 2001, the Air Force began retiring B-1 bombers, reducing the fleet from 93 aircraft to 60 aircraft.

⁷Current DoD plans don't call for a new bomber to be fielded until 2037.

⁸John Roos. "Holding the Heading: Air Force Chief Shares His View of Transformational Activities." *Armed Forces Journal International*. May 2002.

the target decks that we have prepared for conflicts in most parts of the world.⁹ Each B-2 is anticipated to carry over 300 SDBs, which are expected in 2007.¹⁰ These projections indicate that 21 B-2s could theoretically attack over 6,000 separate targets in a single operation. Today, such an attack would require nearly 400 B-2s, assuming 16 weapons each.

Bomber supporters counter that the math doesn't always translate to the battlefield. If the United States were to face two simultaneous conflicts, for example, the 16 combat-coded B-2s would be stretched thin regardless of how many bombs each carried. Moreover, enhanced capability has increased, not decreased, demand for bombers in recent conflicts. Lastly, bomber advocates note that neither the 500 lb. JDAM nor the SDB has been successfully fielded yet, and it may be imprudent to make decisions about the future size of the bomber inventory based on weapons that have not yet been deployed.

Projected Range and Air-to-Ground Strike Capabilities of Bombers and Select Fighters

Feature	B-1	B-2	B-52	F-35 (JSF)	F/A-22
Un-refueled Combat Radius (nautical miles)	2,200	3,000	3,826	633	540
Payload (lbs.)	55,000	40,000	50,000	14,600	4,500
2,000 lb. JDAMs	24	16	18	2	2 *
500 lb. JDAMs	n/a	80	30	2	n/a
Small Diameter Bombs **	144	320+	144	8	8

Sources: Air Combat Command Public Affairs Office, Jane's All the World's Aircraft (various years), USAF Fact Sheets, Air Force Almanac (various years).

Note: Stated numbers for the JSF and F/A-22 assume an air-to-ground strike configuration and that fuel and weapons are carried internally. Although both are capable of carrying external fuel tanks and weapons, doing so can compromise stealth. Data for the JSF is projected; flight testing has not been completed.

* The F/A-22 cannot carry the 2,000 lb. JDAM. It can carry two 1,000 lb. JDAMs internally for strike missions.

** Numbers for the SDB are estimates; SDB development has not been completed.

A key consideration regarding investing in a next-generation long-range bomber is when to begin a development program. A second question that may confront Congress is what the desired characteristic of a future bomber may be.

Urgency

How urgent is the need for a next generation bomber program? Current Air Force plans call for a new long-range bomber to come on line in 2037, about the time when it predicts that corrosion, fatigue, or other problems will render substantial numbers of existing bombers inoperable. The Air Force's 1999 bomber roadmap states that 190 bombers are needed to fulfill its long-range strike mission requirements and estimates that the numbers of existing bombers will drop below that level in 2037.¹¹

The House Armed Services and Appropriations Committees, contending that a new bomber will be needed before 2037, recently added \$100 million to the Bush Administration's FY 2004 budget

⁹*Ibid*

¹⁰John Tirpak. "Bomber Questions." *Air Force Magazine*. September 2001.

¹¹U.S. Air Force White Paper on Long Range Bombers. March 1, 1999.

request to accelerate research and development of a next generation bomber.¹² The Armed Services Committee expressed concern that the Air Force's schedule will not ensure a sufficient bomber force for future requirements and states that it expects the Air Force to update its Future Years Defense Program to include funding to develop and procure a new bomber "well prior" to its previous plan.¹³ The arguments put forward by advocates of beginning a new bomber program earlier than the current Air Force plan include the following:

- The need for more and better long-range, high-payload strike aircraft that can penetrate advanced air defenses.
- The old age and vulnerability of the B-52. The youngest B-52 is now over 40 years old. While its remarkable durability and flexibility has sustained the B-52's relevance, at some point fatigue will catch up to it. Additionally, because the B-52 lacks sophisticated defenses and is easily detected by radar, its capabilities are limited unless enemy defenses have been suppressed.

Bomber advocates' contend that the Air Force tends to be biased toward fighter aircraft and has chronically underfunded bomber programs. One well known aviation historian argues:

They (USAF leaders) recoil at the idea of sending Air Force fighter pilots into air-to-air combat during the first decade of the 21st century in F-15C, which were first built in the 1970s, but upgraded and produced into the 1990s. Yet, they apparently have no qualms about condemning bomber pilots to fly the ancient B-52Hs, which were last produced in 1962, into combat during the first three decades of the 21st century.¹⁴

These observers argue that the Air Force gives priority to fighters because the leadership of the service tends to be tactical fighter pilots. Their bias, critics say, is indicated by what they see as the increasingly lopsided ratio of dollars invested in tactical fighters versus bombers, which increased from slightly less than 5:1 in 1999 to more than 30:1 in 2003.¹⁵ This funding imbalance is reflected in a growing imbalance between tactical fighters and bombers in the Air Force inventory: in 1950, the ratio of fighters to bombers was two to one, but by the late 1990s, the ratio had grown to 16 to one, meaning that less than five percent of the service's 4,000 aircraft were bombers.¹⁶

The Air Force has opposed accelerating development of a follow-on bomber because it believes that the current bomber force is meeting its needs, and that other priorities are more urgent. Air Force Chief of Staff General John Jumper has remarked "...there's nothing that would prompt me to begin retiring the B-52s that continue to work very well and carry large loads."¹⁷ Lieutenant General Dan

¹²House Committee on Armed Services, "National Defense Authorization Act for FY2004," Report #108-106 (H.R. 1588), p. 221. House Committee on Appropriations, "Department of Defense Appropriations Bill, 2004," Report #108-187 (H.R. 2658), p. 269.

¹³House Armed Services Committee, "National Defense Authorization Act for FY2004," Report #108-106 (H.R. 1588), p. 221.

¹⁴Williamson Murray. "U.S. Needs New Bomber, Not more Fighters." *Aviation Week & Space Technology*. March 27, 2002. p.66.

¹⁵*Ibid.*

¹⁶Laura Colarusso. "Analysts: USAF Bomber Force Dangerously Close to Serious Disconnect." *Inside the Air Force*. October 19, 2001.

¹⁷John Roos. "Holding the Heading: Air Force Chief Shares His View of Transformational Activities."
(continued...)

Leaf, serving at the time as Director of Air Force Operational Requirements said that “we can’t realistically afford to modernize everything at once.” Fielding the future strike platform “is not as pressing a problem...as continued modernization of the fighters.”¹⁸ Leaf also argues that the Air Force plan favors fighter modernization not only because fighter capabilities need to be upgraded, but also because there have not been major technological leaps that apply to bombers. “The next generation bomber study...led the service to postpone development of a future strike platform because ‘there wasn’t significant technological advance anticipated in the near term to merit going forward right now,’” Leaf explained.¹⁹ Former Chief of Staff General Mike Ryan states the Air Force “wants to make a big leap in capability with its next strategic system...we need to go to the next level of strike capability, beyond the B-2.”²⁰

Desired Capabilities

What characteristics should a next-generation bomber have? Among the factors to be considered are range, payload, speed, unit cost, stealth, and whether the aircraft will be manned or unmanned. Reportedly, Air Combat Command (ACC) is examining four options:

- The B-3: an upgraded version of the B-2 that has greater payload and range along with better stealth and communications.
- Hypersonic Cruise Vehicle (HCV): An aircraft that would operate in the upper atmosphere at “hypersonic” speeds (Mach 12). It would be virtually invulnerable to enemy defenses because of its speed and altitude and could reach east Asia from the continental United States in less than two hours.²¹
- A high-altitude, low-cost unmanned combat aerial vehicle (UCAV) with a range of 17,000 nautical miles and a payload of 4,000 lbs.
- A lower-flying, stealthy UCAV.²²

Supporters of the Air Force’s leap ahead approach argue that competitors may arise to challenge U.S. air power in the future. The proliferation of advanced Russian surface-to-air missiles, for example, is just a hint of the kind of weapons that may emerge tomorrow. Potential adversaries are also developing anti-access systems and techniques like GPS jamming, “anti-stealth” radars, and terminal defenses that will require serious technological advances to defeat, they argue.

Opponents of the Air Force’s plan, on the other hand, point out that the United States has dominated the air in every conflict since Vietnam, and especially since the Persian Gulf War in 1991. They argue that while we should improve on today’s capabilities, we can strive toward cost effective

¹⁷(...continued)

Armed Forces Journal International. May 2002.

¹⁸Laura Colarusso. “Future Strike Platform Takes Back Seat to Fighter Modernization. *Inside the Air Force*. March 1, 2002. Undersecretary of Defense Aldridge makes similar arguments in “Interim Bomber?” *Aerospace Daily*. August 12, 2002.

¹⁹*Ibid.*

²⁰John Tirpak. “Bomber Questions.” *Air Force Magazine*. September 2001.

²¹“Hypersoar,” www.globalsecurity.com. Accessed on 7/22/2003.

²²Laura Colarusso. “Future Strike Platform Takes Back Seat to Fighter Modernization.” *Inside the Air Force*. March 1, 2002.

solutions. Developing leap ahead capabilities will be difficult and expensive—Air Force officials say that research into hypersonics has advanced little beyond the X-30 National Aerospace Plane, which was cancelled in 1995.²³ Yet it is unclear that we need such exotic capabilities in tomorrow's long-range bombers. Retired Air Force General Richard Hawley argues, for example, that

It is not even clear that supersonic flight is a desirable, much less required attribute for a future long-range strike platform. From the standpoint of military utility, loiter capability appears more valuable than speed, given the strategic premium now being placed on dealing with mobile and other time-critical targets.²⁴

Those who wish the Air Force to accelerate its bomber plans believe tomorrow's bomber could leverage existing platforms and technologies. Adapting technologies developed for the F/A-22, for example, or outfitting the Global Hawk UAV with more powerful engines and state-of-the-art weapons such as the Small Diameter Bomb, might be cost-effective ways to expand strike capabilities. Some even argue that commercial aircraft such as the 767 could serve as the foundation of a new bomber. Savings would be achieved by using parts and structures built in large numbers for airliners.²⁵ Because the United States can achieve air supremacy quickly and because bombs have become so accurate, some argue that bombers have essentially become "trucks" for hauling large quantities of ordnance over great distances. They argue that only a few bombers with expensive capabilities such as stealth and supersonic speed are needed. There is an important role, they say, for cheap, commercially-derived aircraft that simply carry lots of weapons and fuel.

Naval Strike Aviation

Some, including Admiral Vernon Clark, the Chief of Naval Operations, argue that the Iraq war, like the war in Afghanistan, has underscored the need for the Navy to replace its shorter-ranged F/A-18C/D strike fighters with longer-ranged F/A-18E/F strike fighters and F-35 Joint Strike Fighters. In both Afghanistan and Iraq, Clark and others have argued, Navy F/A-18C/Ds performing long-range, long-duration missions (including missions in which aircraft orbit over target areas while waiting for targets of opportunity to emerge) required multiple in-flight refuelings per sortie. Supporters assert that F/A-18E/Fs or F-35s, can perform such missions with fewer in-flight refuelings or none at all, reducing the Navy's need for aerial refueling, which was in short supply in the Iraq war. During the Iraq war, the number of strike sorties flown from carriers was reduced in some instances due to insufficient in-flight refueling assets. Replacing F/A-18C/Ds with F/A-18E/Fs and F-35s, they now argue, will reduce the chances of such problems occurring in future operations.

In Afghanistan, Navy strike aircraft carried out the first attacks of the conflict along with long-range Air Force bombers, and Tomahawk cruise missiles. In this conflict, the Navy proved that it could sustain high sortie generation rates over long distances—each mission lasted, on average, five to seven hours, 750 miles one way. The Navy also reportedly greatly increased its use of PGMs over Operation Desert Storm, and demonstrated a greatly improved ability to attack targets of opportunity. With limited basing for Air Force theater-range aircraft and long range bombers, Naval strike aircraft

²³Nick Cook. "USAF Hones Future Bomber Requirement." *Jane's Defence Weekly*. January 2, 2002.

²⁴General Richard Hawley and John Backshies. "Closing the Global Strike Gap." *Armed Forces Journal International*. September 2001.

²⁵Robert Wall. "USAF Bomber Plans Spark Renewed Debate." *Aviation Week & Space Technology*. April 2000. p.30.

arguably were essential to the air war in Afghanistan.

Five Navy aircraft carriers and a total of 408 Navy aircraft (almost all of them operating from carriers) were involved in the Iraq war. Another 372 Marine Corps aircraft (many operating from Navy amphibious ships) were also involved. The combined naval (i.e., Navy and Marine Corps) total of 780 aircraft represented about 43% of the 1,801 aircraft (excluding Army helicopters) used in the war. Naval aircraft flew 13,893, or about 34%, of the 41,404 sorties (excluding sorties by special operations and Army helicopters, and "coalition sovereignty flights") in the war.²⁶

Supporters of aircraft carriers and sea-based aircraft may argue that the Iraq war, like the war in Afghanistan, demonstrated the value of aircraft carriers and carrier-based aircraft for conducting U.S. military operations where access to in-theater land bases is limited. The Navy's investment in these platforms, proponents argue, should be increased to mitigate potential forward basing access problems and ensure future U.S. long range conventional strike capabilities.

Tactical Air Integration Plan (TAI)

As part of its FY2004 budget submission, the Department of the Navy (DoN) proposed implementing a Navy-Marine Corps Tactical Air Integration (TAI) plan that would more fully integrate the Navy and Marine Corps strike fighter forces. Key elements of the plan, which would be carried out between late-FY2003 and FY2012, include the following:

- Operate a smaller total number of DoN strike fighters. The planned total number of operational DoN strike fighters would be reduced.
- Reduce planned procurement of strike fighters. Consistent with the reduction in the total number of operational strike fighters, planned purchases of F/A-18E/Fs and JSFs would be reduced: 88 E/Fs (16%) would be cut from the previously planned purchase of 548 aircraft and 409 JSFs (38%) would be cut from the previously planned purchase of 1,089 aircraft.
- Increase the readiness of Navy strike fighters. DoN would use some of the savings from reduced F/A-18E/F and JSF procurement to increase the readiness of Navy strike fighters. Navy strike fighter squadrons, whose readiness traditionally has been allowed to decline between the times that they are assigned to deploying Navy aircraft carriers, would be maintained at a more consistently high level of readiness over time (like Marine Corps strike fighters), so that they would be available in times of emergency for surge deployments aboard Navy carriers or with deploying Marine Corps units.
- Enhance funding for DoN strike fighter modernization and ancillary equipment. To further increase the capability of the smaller strike fighter force, DoN would use some of the savings from reduced F/A-18E/F and JSF procurement to enhance funding for DoN strike fighter modernization (i.e., upgrade) programs and procurement of DoN strike fighter ancillary equipment (such as targeting pods).

²⁶In the 1991 Persian Gulf war, only a small percentage of carrier-based combat aircraft were equipped to drop precision-guided munitions, and a lack of proper electronic links forced the air tasking order (ATO) to be sent each day from the land-based air operations center to the aircraft carrier in physical rather than electronic form. In the Iraq war, in contrast, all Navy and Marine Corps carrier-based strike fighters were equipped to use precision-guided weapons, and the ATO could be transmitted to the carriers electronically.

- Cross-assign Navy and Marine Corps strike fighter squadrons. On a day-to-day basis, 3 Navy strike fighter squadrons would be assigned to deploying Marine Corps units, and 6 Marine Corps strike fighter squadrons would be assigned to help fill out Navy carrier air wings. This is intended in part to familiarize pilots from each service with the operations of the other service and thereby ensure that in times of emergency, strike fighters from one service could be readily surged to meet the strike fighter needs of the other service. The cross-assignment of the 6 Marine Corps squadrons would add to the 4 Marine Corps strike fighter squadrons that, since the 1990s, have been assigned to help fill out Navy carrier air wings, bringing the total number of cross-assigned Marine Corps squadrons to 10.

The TAI plan poses potential issues for Congress in terms of its effect on total DoN strike fighter capability, and its cost effectiveness.

What effect would the TAI plan have on total DoN strike fighter capability, including the ability of the DoN strike fighter fleet to fulfill its part of the U.S. military's requirement to be able to fight distant conflicts? DoN officials argue that the TAI plan's operational strike fighter force, though numerically smaller than the previously planned force, would provide more forward-deployed DoN strike fighter capability on a day-to-day basis due to the enhanced individual capability of all DoN strike fighters. They also argue that the TAI plan would improve DoN's ability to surge additional strike fighter capability in times of emergency due to the increased surge readiness of Navy strike fighters, the improved ability to assign surged aircraft from one service to meet the needs of the other service, if need be, and the enhanced individual capability of all DoN strike fighters. Skeptics of the TAI plan may question whether the numerically smaller TAI force, even with its improvements in readiness, modernization, and ancillary equipment, would have enough aircraft to fight and win two regional conflicts at the same time.

In assessing the effects of the TAI plan on total DoN strike fighter capability, one potential issue concerns the plan's enhanced funding for DoN strike fighter modernization programs and ancillary equipment. Although "enhanced funding" might be understood to mean increased funding, DoN officials state that in the case of the TAI plan, enhanced funding refers, to a significant degree, to an *increased likelihood* that DoN in coming years would be able to afford certain strike fighter modernization programs and ancillary equipment that were included under its old strike fighter plan. For Congress, potential questions include the following: How much of the TAI plan's enhanced funding represents increased funding, and how much represents an increased likelihood of being able to afford strike fighter modernization programs and ancillary equipment included in DoN's old strike fighter plan? Has DoN quantified the increase in likelihood that these programs would be funded under the TAI plan? If the increase in funding likelihood is less than DoN believes, would the TAI force still provide more capability than the previously planned force?

Another question concerns the measurement of individual aircraft capability. Assuming the TAI plan would result in a strike fighter force reflecting greater amounts of spending for modernization and ancillary equipment, what is the resulting amount of improvement in individual aircraft capability? Has DoN quantified this improvement? If the improvement is less than DoN believes, would the TAI force still be more effective than the previously planned force?

A second potential issue for Congress is the cost effectiveness of the TAI plan. When all the cost impacts of the TAI plan are taken into account, would the net cost impact of the plan be worth the resulting change in overall DoN strike fighter capability?

Although DoN estimates that the TAI plan would reduce DoN strike fighter procurement costs by about \$35 billion through FY2021, these savings would be offset by additional expenditures in other areas. The most prominent offset would be the additional operation and maintenance spending required to increase the readiness rates of Navy strike fighters. DoN officials estimate that increased spending for strike fighter readiness through FY2021 would total about \$16.5 billion, which would offset about 47% of the avoided strike fighter procurement costs. The percentage of avoided procurement costs offset by increased readiness costs would continue to grow after FY2021, until the strike fighters in the TAI plan are replaced by a future generation of aircraft. (These figures would change if computed on a discounted basis to reflect the investment value of money over time.) It should also be noted that within the FY2004-FY2009 Future Years Defense Plan (FYDP), the TAI plan's procurement savings of about \$1 billion would be offset by about \$3.7 billion in additional aircraft readiness costs.

Annual military aircraft operation and maintenance costs have been growing in recent years, particularly for older aircraft. And new models of DoD aircraft have sometimes, if not often, proven to be more expensive to operate and maintain than planned. If the increased readiness costs of the TAI plan are underestimated, then (other things held equal) the percentage of avoided procurement costs that are offset by increased readiness costs could be higher. On the other hand, if DoN strike fighter *procurement* costs are underestimated, which would be consistent with some past DoD aircraft procurement programs, then the savings associated with not procuring the 497 aircraft would be greater than \$35 billion, and the percentage of the procurement savings offset by a given amount of increased readiness costs would be lower.

A second potential offsetting cost would be increased spending for DoN strike fighter modernization and ancillary equipment. Although, as mentioned earlier, much (perhaps most) of the enhancement of funding in these areas under the TAI plan refers to an *increased likelihood* of being able to afford modernization and ancillary equipment programs included under DoN's previous strike fighter plan, some of the enhancement would come in the form of *increased amounts* of spending in these areas.

A third potential source of offsetting costs are increased unit JSF procurement costs. The 409-aircraft reduction in DoN purchases of JSFs that would occur under the TAI plan would reduce the total planned buy of JSFs (2,912 aircraft, including 60 for the Royal Navy) by about 14%. Any Air Force or Royal Navy JSFs scheduled to be procured after the 409 DoN JSFs would now occur earlier on the production learning curve and therefore be more expensive for these services to procure (though perhaps only marginally so). In addition, if the reduction in the planned DoN JSF buy resulted in reduced *annual* JSF procurement rates in certain years compared to the old JSF procurement plan, then the JSFs produced during those years could be more expensive due to reduced spreading of manufacturer and supplier fixed overhead costs. The resulting increase in unit procurement cost would be incurred by whatever services are procuring these JSFs.

Question 3: What kind of support aircraft are required to achieve and maintain air dominance and sustain long-range conventional strikes?

The final oversight question that frames the debate on which investments to make to maintain and improve DoD's conventional long-range strike capabilities in an era of limited and uncertain access to land bases pertains to support aircraft. There are many different types of aircraft that

currently support the services' combat aircraft.²⁷ Perhaps the most prominent areas of congressional oversight pertain to investments in aerial refueling and radar jamming aircraft.

Aerial refueling

Both this sub-committee and the full committee held hearings last year on Air Force aerial refueling recapitalization. Since those hearings explored the underlying issues, and investment options for aerial refueling, this section will provide only a brief discussion.

It is currently unclear whether Congress's and the Air Force's compromise to purchase 20 KC-767s and lease 80 will come to fruition. Four other aerial refueling investment options that could be considered regardless of the lease's future include:

- Re-engining some portion of the KC-135E fleet,
- Converting some number of used commercial aircraft, such as the DC-10, into tanker aircraft,
- Increasing the use of aerial refueling contract services, especially for military exercises or the homeland defense mission, thereby freeing scarce military tanker aircraft to prosecute wartime requirements
- Purchasing or leasing some number of new, commercially derived aerial refueling aircraft other than the KC-767.

Despite considerable congressional scrutiny of this issue last year, at least five key aerial refueling issues remain unknown or unresolved. Any reasonable assessment of these four potential investment options requires that these questions be answered, or at least explored. These questions are:

- What is the total aerial refueling capability required by the services' to support current and future U.S. military operations?
- What is the required number of aerial refueling aircraft, with what mix of characteristics (e.g., range, payload, offload speed, number and type of fuel dispensers), that will best meet this requirement?
- How might requirements for aerial refueling aircraft change as a result of potential changes in the future mix of combat aircraft (long-range bombers, fighters, and unmanned air vehicles) to be supported?
- Are the current and anticipated Air Force aerial refueling aircraft modernization efforts sufficiently joint, particularly in terms of satisfying the aerial refueling needs of the Navy and Marine Corps?
- How quickly must today's aging tanker aircraft, especially the KC-135Es, be replaced?

Radar jamming

Currently, 120 Navy and Marine Corps EA-6B Prowlers are the services' only stand-off radar jamming aircraft.²⁸ These aging aircraft are in very high demand. They have been used heavily in recent conflicts, such as Bosnia, Kosovo, Operations Northern and Southern Watch, and Operation

²⁷ Other types of important support aircraft include intelligence, surveillance and reconnaissance aircraft, command and control aircraft and cargo aircraft.

²⁸ EC-130 Compass Call aircraft can provide some radar jamming capability, but these aircraft are primarily communications jammers.

Iraqi Freedom to suppress enemy air defenses, and protect strike aircraft.²⁹ While the Air Force had hoped that stealthy aircraft such as the F-117 Nighthawk and B-2 stealth bomber would be able to penetrate enemy air defenses by virtue of their stealth capabilities alone, Joint Forces Air Component commanders have found it prudent to protect these aircraft with EA-6Bs.³⁰ The downing of an F-117 in Operation Deliberate Force (the war in Bosnia), indicates that these aircraft are vulnerable to enemy air defenses if not protected adequately.

The Navy announced plans to replace its EA-6Bs with a radar jamming variant of the F/A-18F Super Hornet, the EA-18G Growler, even before the results of the December 2001 joint Electronic Attack Analysis of Alternatives, or EA-AOA, was completed. The Navy plans on developing and purchasing 90 EA-18Gs.

The Air Force appears to be planning a dual approach to creating a future stand-off radar jamming capability. Since the EA-AOA published its results, Air Force leaders have said that modifications to the B-52 are being considered to counter certain types of enemy radars, and the miniature air-launched decoy (MALD) is being considered to counter other types of radars. The FY05 budget includes a request for \$57.6 million for B-52 stand-off jamming equipment.³¹

The importance of radar jamming to aircraft survivability, the small inventory and rapid aging of EA-6Bs, and concerns about the proliferation of technologically advanced enemy air defenses, suggests that investments in future radar jamming capabilities may be a high priority for both achieving air dominance and conducting long-range strike. At least six investment questions are evident:

- Are 90 EA-18Gs enough aircraft to protect all Navy strike aircraft? Are they enough to support Marine Corps operations? Air Force operations? Today's fleet of 120 Prowlers are very busy. Furthermore, despite the pressing need to replace the Prowlers, DoD may delay the EA-18G's procurement by one year (FY2007 instead of FY2006) due to a \$150 million shortfall in the Growler's RDT&E account.
- The Marine Corps is still developing its plans for replacing its EA-6Bs. What options appear most attractive to the Marines? They currently do not fly, nor do they plan on procuring the F/A-18E/F. Much of the EA-18G's attractiveness is that it is highly common with the F/A-18F, and thus its inclusion in the fleet poses few problems for logistics and training. Therefore, purchasing the EA-18G does not offer the Marine Corps the same benefits as it does the Navy. Is the Marine Corps considering developing a radar jamming variant of the JSF? If so, would a joint program with the Air Force save money and make sense?
- Originally, the Navy and Boeing, the F/A-18's manufacturer, said that the F/A-18F could be easily converted to the G model, and that G models could be converted into F models. This adaptability would benefit the fleet by allowing air wings to tailor strike and radar jamming

²⁹ The Taliban's air defenses were limited primarily to shoulder-fired, IR-guided missiles, which reduced the requirement to employ EA-6Bs during the war in Afghanistan

³⁰ B.Gen. Robert M. Flanagan, Deputy Commander II Marine Expeditionary Force, Testimony before the House Armed Services Committee, Subcommittee on Military Readiness, on Problems Encountered, Lessons Learned and Reconstitution following Operation Allied Force. October 26, 1999.

³¹ Telephone discussion with Air Force Office of Legislative Liaison. February 26, 2004.

capabilities depending on anticipated threats. In May 2003 it was announced that the F models would still be convertible to G models, but G models would not be able to be converted to F models.³² Does this reduction in flexibility make the EA-18G less attractive, or suggest that investments in this program could be reduced?

- Some suggest that the JSF's Active Electronically Steered Array (AESA) radar already has good radar jamming capabilities in select frequencies. How much would the JSF's AESA radar contribute to the overall radar jamming mission, and what additional investments would be required to either increase the frequencies that can be jammed, or the effectiveness of the jammer? Would a second seat need to be added to the aircraft to make it an effective platform for this mission?
- One reason the Navy likes the EA-18G is because the aircraft shares many of the same flight characteristics as the aircraft it is protecting, the F/A-18E/F. Thus, it is able to escort the aircraft throughout its mission, and operational coordination is facilitated. Might this also be a consideration for the Air Force? While the EB-52 may have a long jamming range, due to its high power, it would not be able to fly closely with F/A-22s or JSF's through their mission profiles. Does this pose operational coordination problems or might it leave the strike aircraft vulnerable at critical points in the mission? What other or additional investments might be required to ensure that Air Force strike aircraft are protected throughout their entire missions?
- Is it wise for the Air Force to base its radar jamming plans on a 40 year old bomber? While the B-52 does have many years left to fly, it is projected to leave the inventory in 2037. After the EB-52 becomes operational, won't the Air Force need to begin planning for how best to replace that jamming capability once the B-52 retires?
- What is being done to develop a joint solution for the radar jamming mission as opposed to separate service solutions?

Mr. Chairman, that concludes my remarks. Thank you again for the opportunity to speak with you today. I look forward to addressing any questions you and the committee may have.

³²Stephen Trimble. "EA-18G Begins to Diverge from Super Hornet." *Aerospace Daily*. May 28, 2003.

NOT FOR PUBLICATION
UNTIL RELEASED BY
HOUSE ARMED SERVICES COMMITTEE

STATEMENT OF
RONALD O'ROURKE
SPECIALIST IN NATIONAL DEFENCE
CONGRESSIONAL RESEARCH SERVICE
BEFORE THE
HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON PROJECTION FORCES
HEARING ON CONVENTIONAL LONG-RANGE STRIKE OPERATIONS
MARCH 3, 2004

NOT FOR PUBLICATION
UNTIL RELEASED BY
HOUSE ARMED SERVICES COMMITTEE

Mr. Chairman, distinguished members of the subcommittee, thank you for the opportunity to appear before you to discuss conventional long-range strike capabilities. As requested, my testimony will discuss potential oversight issues and investment options in connection with the conventional long-range strike capabilities of Navy surface combatants and attack submarines.

My testimony will focus on the following:

- the meaning of “long-range strike capabilities” when applied to surface combatants and attack submarines,
- the potential inherent advantages of Navy surface combatants and attack submarines as long-range strike platforms,
- the Tomahawk missile inventory,
- the Affordable Missile as a potential supplement to the Tomahawk,
- the concept of a long-range, high-speed strike missile for Navy surface combatants and submarines, and
- the relationship of long-range strike weapons to the Expeditionary Strike Group (ESG) and Surface Strike Group (SSG) concepts, the DD(X) destroyer program, and the Trident SSGN submarine program.

Meaning of “Long-Range Strike” for Navy ships

There appears to be no single agreed-upon definition of “long-range strike capabilities,” but when the term is used in connection with Navy surface combatants and attack submarines, most discussions appear to focus on capabilities for attacking land targets that are 350 nautical miles (nm) to 1,200 nm from the ship. Attacks on land targets that are 200 nm or less from the ship, in contrast, tend to be discussed in connection with the alternative concept of naval surface fire support (NSFS), which aims at assisting friendly ground forces that are conducting combat operations ashore.

This testimony focuses on capabilities for attacking targets that are at least 350 nm from the ship, and consequently does not focus on weapons that have been proposed for attacking land targets at ranges of 200 nm or less. Examples of such weapons include NTACMS (a Navy version of the Army Tactical Missile System) and Land Attack Standard Missile (or LASM, a land-attack variant of the Navy’s Standard surface-to-air missile), which have maximum ranges between 100 nm and 200 nm. The exclusion of weapons like NTACMS and LASM from this testimony is based on range only and is not intended as a comment on the potential cost-effectiveness of such weapons as a means of attacking targets at ranges of 200 nm or less.

Navy Ships As Long-Range Strike Platforms

Navy surface combatants and attack submarines offer at least three potential inherent advantages as long-range strike platforms:

- **Freedom from overseas land bases.** A key characteristic of naval forces, including surface combatants and submarines, is that they can operate in international waters, without need for access to in-theater land bases. In light of the committee's concerns regarding limited and uncertain access to such bases in the future, this advantage is potentially of fundamental significance.
- **Persistence on station at weapon-launch locations.** A second inherent characteristic of surface combatants and attack submarines is that they can remain on station at their weapon-launch locations, ready to fire large numbers of strike weapons immediately or almost immediately, persistently for weeks or months at a time. Aircraft, in contrast, usually can remain on station at their weapon-launch locations for a matter of hours before they need to return to base, making it potentially expensive to keep at least one aircraft persistently at a weapon-launch location for extended periods of time. The ability to remain on station at weapon-launch locations for extended periods of time can be particularly important in responding to situations of extended political tension that could suddenly evolve into crises or conflicts, or in attacking targets (such as terrorist forces) that are normally hidden but may expose themselves to detection on rare and unpredictable occasions.
- **Stealth and strikes without warning.** Navy attack submarines offer a third potential advantage in being inherently stealthy. Submarines can operate in an area of interest for extended periods of time without being detected by the enemy, giving them the ability to conduct no-warning strikes. This can be of particular value for attacking targets that can respond to warnings of impending strikes by relocating or taking defensive measures. Although the idea of operating undetected at sea is usually associated with submarines, supporters of surface combatants may argue that, for potential adversaries lacking access to ocean-surveillance assets, surface ships might effectively be just as stealthy as submarines. Some observers, for example, have suggested that in the case of the war in Afghanistan, the Taliban government may have had no way of detecting and tracking the activities of any kind of Navy ship operating in the Northern Arabian Sea.

In light of these potential inherent advantages, a policy issue whether current DoD plans make adequate use of Navy surface combatants and attack submarines as conventional long-range strike platforms.

Tomahawk Inventory

In considering this issue, one potential oversight issue for Congress concerns the inventory of Tomahawk land attack cruise missiles (TLAMs). TLAMs can attack targets up to 900 nm away with

warheads weighing up to 1,000 pounds. A total of 802 TLAMs were used in the Iraq war,¹ or more than 40% of the reported pre-war inventory of 1,890 to 2,000 TLAMs,² which itself may have been much smaller than called for in DoD plans.³ The relatively low TLAM inventory level raises a question of whether Navy surface combatants and attack submarines are currently being deployed with fewer TLAMs in their Vertical Launch System (VLS) tubes than operational planners might desire.

The version of the TLAM now being procured is the Block IV, more commonly called the Tactical Tomahawk (TacTom). The amended FY2004-FY2009 Future Years Defense Plan (FYDP) that was submitted to Congress last month calls for procuring 293 TacToms in FY2005 and more than 400 per year in the remaining years of the FYDP.

Given the large number of Tomahawks used in the Iraq war, and the currently rather low inventory of Tomahawks, some observers last year proposed increasing the number of TacToms to be procured in FY2004 and subsequent years to levels above those in the Navy's plan, so as to replenish the Tomahawk inventory more quickly. To support this plan, these observers proposed increasing the capacity of the Tomahawk production line from 38 missiles per month (456 missiles per year) to 50 missiles per month (600 per year) or 75 missiles per month (900 missiles per year).⁴ The table below summarizes congressional action last year on the FY2004 funding request for procurement of TacToms and for additional TacTom production tooling and testing equipment.

¹U.S. Department of Defense. *Operation IRAQI FREEDOM – By The Numbers*. (Assessment and Analysis Division, USCENTAF, T. Michael Moseley, Lt Gen, USAF Commander, April 30, 2003, Unclassified) 16 p.

²Pae, Peter. Raytheon's Task: More Missiles, On The Double. *Los Angeles Times*, April 3, 2003; Squeo, Anne Marie. Navy's Tomahawk Arsenal Dwindles. *Wall Street Journal*, April 3, 2003; Infield, Tom. Tomahawks Used Heavily In War's First 12 Days. *Philadelphia Inquirer*, April 2, 2003.

³For an earlier discussion of reported desired and estimated Tomahawk inventory levels, see CRS Report RS20162, *Cruise Missile Inventories and NATO Attacks on Yugoslavia: Background Information*, by Ronald O'Rourke. Washington, 1999. (April 20, 1999) 6 p.

⁴See, for example, Brown, Malina. Raytheon Prepared To Accelerate Tactical Tomahawk Production. *Inside the Navy*, April 7, 2003; Pae, Peter. Raytheon's Task: More Missiles, On The Double. *Los Angeles Times*, April 3, 2003; Squeo, Anne Marie. Navy's Tomahawk Arsenal Dwindles. *Wall Street Journal*, April 3, 2003; Raytheon In Talks For Possible Production Increase. *Defense Daily*, April 3, 2003; Selinger, Marc. Navy Chief Looking At Ways To Remedy Tomahawk Shortage. *Aerospace Daily*, April 2, 2003; Keeter, Hunter. Clark Calls For Accelerating TLAM Production. *Defense Daily*, April 2, 2003; Brown, Malina. Navy Officials Warn Congress Of Urgent Tomahawk Shortfalls. *Inside the Navy*, March 31, 2003; Keeter, Hunter. Mullen Argues Against Remanufacturing Tomahawks, Prefers Block IV. *Defense Daily*, March 31, 2003.

**FY2004 Procurement of TacToms and
TacTom Tooling and Testing Equipment**
(dollars in millions)

	Req.	HASC report	SASC report	Auth. conf. report	HAC report	SAC report	Approp. conf. report
Procurement quantity	267	600	267		450	325	350
Procurement funding	\$277.6	\$613.6	\$277.6	\$460.6	\$460.6	\$272.3	\$355.3
Add'l tooling, testing equip.	\$0	\$40.0	\$0	\$25.0	\$25.0	\$0	\$0

In its report (H.Rept. 108-106 of May 16, 2003) on the FY2004 defense authorization bill (H.R. 1588), the House Armed Services Committee stated:

The committee notes that the Department of the Navy's programmed budget for Tomahawk missiles would result in an inventory that is significantly below the Navy's stated Tomahawk required inventory levels, and that recent Tomahawk missile expenditures, which have been in excess of 700 for Operation Iraqi Freedom, have exacerbated this shortfall. The committee also notes that the Emergency Wartime Supplemental Appropriations Act for Fiscal Year 2003 (Public Law 108-11) established a \$15.7 billion Iraqi Freedom Fund to provide for additional expenses associated with the ongoing military operations in Iraq including the replacement of munitions. Additionally, the statement of the managers accompanying the conference report on H.R. 1559 (H. Rept. 108-76) specifically identified TACTOM missiles among those precision guided munitions that should be procured from the funds provided. Since the committee believes that the Tomahawk missile shortage is severe and should be aggressively addressed in fiscal year 2003, it directs the Department of Defense to obligate at least \$24.0 million from funds provided in the Iraqi Freedom Fund by Public Law 108-11 to increase TACTOM production capacity to 600 missiles per year and to obligate at least \$336.0 million for an additional 300 TACTOMs. The committee understands that the additional TACTOMs can be delivered beginning in January 2005 with an associated production rate increase to 600 missiles per year beginning in November 2006.

To sustain TACTOM production at a rate of 600 missiles per year for fiscal year 2004, the committee recommends an increase of \$336.0 million for an additional 333 TACTOM missiles.

The committee also believes that future wartime expenditures may require inventory replenishment rates up to 900 missiles per year. Accordingly, the committee recommends an increase of \$40.0 million for further tooling and test equipment, and understands that a contract award in the second quarter of fiscal year 2004 would allow a 900-missile-per-year production capacity to be achieved by the second quarter of fiscal year 2006. (Pages 62-63)

In its report (H.Rept. 108-187 of July 2, 2003) on the FY2004 defense appropriations bill (H.R. 2568), the House Appropriations Committee stated:

In fiscal year 2005 the Navy should strive to achieve the highest annual production rate possible, with the goal of maintaining the 450 annual rate recommended by the Committee. This will no doubt require the Navy to adjust its fiscal year 2005 investment strategy because the current fiscal year 2005 plan is an annual production rate of 218 missiles. The Committee does not think it prudent to negate this 2004 recommended production rate with a large drop in future production rates and strongly recommends the Navy adjust its 2005 plan accordingly. (Page 139)

Although the conference report (H.Rept. 108-283 of September 24, 2003) on H.R. 2568 did not provide any funding for additional TacTom tooling and testing equipment, the conferees stated that they did so "understanding that this requirement will be accommodated from within funds previously made available to the Department of Defense as part of the Emergency Wartime Supplemental Appropriations Act (Public Law 108-11)." (Page 178)

Congress last year also approved multiyear procurement (MYP) authority for the TacTom program, beginning in FY2004. The authority was provided in section 122 of the FY2004 defense authorization bill, which states that "The total number of missiles procured through a multiyear contract under this section shall be determined by the Secretary of the Navy, based upon the funds available, but not to exceed 900 in any year," and in section 8008 of the FY2004 defense appropriation bill.

The 293 TacToms requested by the Navy for FY2005 are less than the 350 that were funded in the conference report on H.R. 2568, but more than the 218 TacToms that were projected for FY2005 in the Navy's FY2004 budget submission.

Potential oversight issues for Congress concerning the Tomahawk inventory and FY2005 TacTom procurement include the following:

- To what degree are surface combatants and attack submarines now being deployed with empty VLS tubes (or weapons that are less preferred than Tomahawks) because the Navy doesn't have enough Tomahawks to fill them?
- What are the potential near-term operational risks of the current shortfall in the Tomahawk inventory? What steps is the Navy taking to manage or mitigate these risks?
- Under the Navy's current procurement plans, how quickly will the shortfall in the Tomahawk inventory be eliminated? How much more quickly could it be eliminated if procurement of TacToms were increased to, for example, 350 or 450 missiles in FY2005, and 500 or 600 missiles per year in subsequent years?
- What effect, if any, would increasing the annual TacTom procurement rate in FY2005 and subsequent years have on TacTom unit procurement costs?

Affordable Weapon System (AWS)

The Tomahawk, though capable, is relatively expensive. TacTom's projected average unit procurement cost of less than \$600,000 is roughly one-half the unit procurement cost of earlier versions of the Tomahawk, but it is still roughly 30 times the cost of an air-delivered Joint Direct Attack Munition (JDAM).

The advent in recent years of relatively inexpensive, GPS-guided (and thus all-weather) air-delivered precision-guided weapons (PGMs) like the JDAM, combined with the ability of the U.S. military to achieve air supremacy against potential adversaries and thereby enhance the survivability of attacking U.S. aircraft, permits U.S. military planners to use land- or sea-based aircraft for conducting long-range precision attacks in all weather conditions at expected platform and weapon

costs that are much lower than those that would be incurred by using Tomahawks. As a result of this development, TLAM-armed surface combatants and attack submarines may now be viewed by U.S. military planners and DoD budget officials as less cost-effective platforms, relative to aircraft, for conducting long-range strikes than was once the case, particularly in situations where expected loss rates for attacking U.S. aircraft are zero or close to zero, as they have been in recent operations.

One option for restoring the relative cost effectiveness of Navy surface combatants as long-range strike platforms would be to develop a significantly less expensive supplement to the Tomahawk. The goal of such a program would be to acquire a weapon that would permit surface combatants and attack submarines to attack at least some targets that they can currently attack with Tomahawks, but which can be procured for a cost that is much closer to that of a JDAM.

One effort for developing such a weapon is the Affordable Weapon System (AWS), which the House Armed Services Committee describes as "a committee initiative to reduce the cost of PGMs through the development of more affordable military systems."⁵ The Affordable Weapon is a low-cost cruise missile now being developed by the Titan Corporation under contract with the Office of Naval Research (ONR). Its range (400 nm to 600 nm) and warhead size (200 pounds) make it potentially suitable for attacking some targets that currently might be attacked with Tomahawks. Supporters of the weapon believe that if procured in large quantities, the Affordable Weapon could be produced for a unit cost of \$60,000, excluding the cost of the warhead. This unit cost, if achieved, would be only a fraction of the cost of a TacTom, and about 3 times the cost of a JDAM.

In its report (H.Rept. 108-106 of May 16, 2003) on the FY2004 defense authorization bill (H.R. 1588), the House Armed Services Committee stated:

The Office of Naval Research (ONR) Affordable Weapon System (AWS) program is an advanced technology initiative to demonstrate the ability to design, develop, and build a capable and affordable precision guided weapon system at a cost that would be an order of magnitude cheaper than comparable weapon systems and in production would achieve a stable unit production cost very early in the production cycle.

The committee notes that the ONR program has been successful in all respects. In less than four years, the AWS program has demonstrated the use of commercial-off-the-shelf (COTS) components to construct a 400–600 mile range, subsonic (180–220 knot), "loitering, 200 pound payload, precision strike missile with global positioning system/inertial navigation system guidance and control and a data link." The missile has both line of sight and satellite data links for interaction with ground stations and forward observers and is reprogrammable in flight. In operational use the missile would be launched from CONEX-type containers that hold between six and twenty missiles and could be carried on land, sea, or air platforms. The initiative has demonstrated that the COTS approach can reduce costs by an order of magnitude from traditional cruise missiles. The current missile cost in large scale production, exclusive of warhead, is estimated to be \$60,000. Within the last 16 months there have been ten successful flight tests that have demonstrated the missile's range, accuracy and other capabilities.

The committee believes that the AWS has enormous potential both for continued development and procurement as a weapon system to fill the gap between cannons and multiple launch rockets and missile systems such as Tomahawk that have longer range and larger warheads and in developing a new paradigm for the rapid development, transition to production, and

⁵H.Rept. 108-106, p. 12.

fielding of new and innovative weapons systems. The committee notes that there are still significant issues to be resolved in transitioning AWS through system development into production: selection and integration of warhead(s); launcher development; production engineering; logistics supportability; training development; and development and operational test. The committee understands that the program is under review by the Navy for transition in the fiscal year 2006 budget. The committee believes that the success demonstrated by the system to date and the operational contribution that the capability would provide to U.S. forces justify seeking new ways to accelerate transition from science and technology to fielded capability. (Pages 169-170)

Navy officials have expressed some interest in the Affordable Weapon, but Navy plans for procuring the weapon are unclear. At a February 12 hearing before the House Armed Services Committee on the Department of the Navy's proposed FY2005 budget, the Chief of Naval Operations (CNO) was asked about the Navy's plans for long-range missiles. The CNO responded:

Our long-range missile system is Tomahawk today and TACTOM for tomorrow.... We are also in this year's budget, again there is funding for the Affordable Weapons system, which has been in S&T [science and technology research] for the last two or three years and is making great progress in the testing area.⁶

Potential oversight issues for Congress concerning the Affordable Weapon include the following:

- What role does the Navy see the Affordable Weapon playing in its future planning for ship-launched, long-range strike weapons?
- What efforts, if any, is the Navy currently pursuing other than the Affordable Weapon for acquiring a ship-launched weapon that is significantly less expensive than the TacTom and capable of attacking targets at ranges of 400 nm or more?
- If Navy surface combatants and attack submarines continue to rely solely on Tomahawk as their long-range strike weapon, will this reduce their cost-effectiveness as long-range strike platforms, relative to aircraft armed with GPS-guided PGMs like JDAM, in the eyes of U.S. military commanders and DoD budget officials?
- Given current requested and programmed levels of funding for the Affordable Weapon, when might it be ready for procurement? Can this date be accelerated through increased funding, and how much additional funding would be required in FY2005 meet this accelerated date?

High-Speed Strike Missile

Current Weapons Are Subsonic. The Tomahawk and the Affordable Weapon are subsonic weapons. The Tomahawk flies at a speed of about 550 miles per hour and consequently can require an hour or more to reach distant targets, while the Affordable Weapon flies at a speed of about 200 miles per hour and consequently can require 2 or 3 hours to reach distant targets. This

⁶Transcript of hearing as reported by Federal Document Clearing House.

raises a third potential issue for Congress regarding the long-range strike capabilities of Navy surface combatants and attack submarines, which is whether to develop and acquire a conventional, long-range, high-speed strike weapon as a complement to the slower-flying Tomahawk and Affordable Weapon.

Two Options for a High-Speed Weapon. There are at least two basic options for such a weapon – a conventionally-armed ballistic missile or a high-speed cruise missile capable of flying at high-supersonic speeds (i.e., Mach 3.5 to Mach 5) or hypersonic speeds (i.e., above Mach 5).

Three Potential Advantages of Such a Weapon. A high-speed strike weapon would offer at least three potential operational advantages – an ability to attack time-sensitive targets, an ability to attack hardened or deeply buried targets, and enhanced weapon survivability against enemy defenses.

Time-sensitive targets. Notional examples of time-sensitive targets, also called time-urgent targets or short-dwell targets, include terrorists or high-value military forces that have temporarily exposed themselves to U.S. sensors but could move beyond the view of those sensors in a matter of a few minutes, or enemy missiles armed with nuclear, chemical, or biological weapons that appear to be in the final stages of being made ready for launch. Exactly how time-sensitive such targets might be is not clear, but U.S. officials have suggested that in some cases, the desired total time from target detection to target destruction might be on the order of “single-digit minutes.”⁷

Attacking targets within such a short time line using aircraft can be very difficult unless aircraft are continuously maintained aloft in locations that are relatively close to such targets, which may not always be possible, particularly if nearby land bases are not available. As mentioned earlier, however, Navy surface combatants and submarines can operate in international waters, free from reliance on in-theater land bases, for weeks or months at a time. Consequently, it might be easier for U.S. military planners to keep a Navy surface combatant or attack submarine constantly within range of potential time-sensitive targets. A ship-launched Mach 6 cruise missile could strike a target 500 nm away in 7 minutes, which is about one-ninth the time that a Tomahawk would require.⁸

Hardened or deeply buried targets. Hypersonic weapons, according to one report, can penetrate surfaces three times deeper than subsonic penetrating weapons.⁹ Press reports on studies for high-speed cruise missiles suggest that such a weapon might be able to penetrate 30 feet to 50 feet of concrete.

Weapon survivability. High speed can reduce the chances of the weapon being detected and countered. An increase of 1.8 Mach points in speed, for example, is equivalent in terms of weapon

⁷See, for example, Tuttle, Rich. Kill Chain Timeline Now Down To ‘Single Digit Minutes.’ *Aerospace Daily*, June 20, 2003; and Morris, Jefferson. Global Hawk Seen As Key In Defeating Iraqi Air Defenses. *Aerospace Daily*, July 16, 2003.

⁸Morris, Jefferson. Navy To Try Again For Hypersonic Missile ACTD In ‘04-05, Official Says. *Aerospace Daily*, October 15, 2003; Wall, Robert. Where Next? *Aviation Week & Space Technology*, October 20, 2003: 32.

⁹Ma, Jason. Hypersonic, Supersonic Weapons Becoming A DoD Research Priority. *Inside the Navy*, October 20, 2003.

survivability to an order-of-magnitude reduction in the weapon's radar cross section.¹⁰

OSD Interest. The Office of the Secretary of Defense (OSD) over the last year reportedly has developed a strong interest in high-speed weapons. An October 2003 press report stated:

There is "a lot of interest" within the Office of the Secretary of Defense (OSD) to get a hypersonic strike missile program off the ground, according to [Rear Admiral John] Chenevey [the Navy's program executive officer for strike weapons and unmanned aviation]. Among the strongest supporters is Ron Sega, the director of defense research and engineering (DDR&E), who is spearheading hypersonics development through the National Aerospace Initiative (NAI).

Studies on the advantages of hypersonic strike weapons have made their benefits apparent, according to Sue Payton, deputy undersecretary of defense for advanced systems and concepts....

"The value of speed [and] the need for speed is something that our current DDR&E [Sega] is very focused on and he's gathering lots of support, and we're hoping that this will be a real transformational capability," she said.

As surveillance methods improve, the speed of the weapon itself soon will become the longest link in the kill chain unless the military develops supersonic or hypersonic cruise missiles, according to John Wilcox, assistant deputy undersecretary of defense for advanced systems and concepts.

"If we had a supersonic cruise missile now, we would probably be able to hit anywhere within a 600-mile wide theater in 15 minutes," he said.¹¹

A second report in October 2003 stated that DoD

wants to breathe new life into languishing efforts to develop faster long-range weapons. A high-speed Mach 5-6-class missile "would really change and transform warfighting," Payton argues....

The Pentagon is interested in not only hypersonic weapons--those operating above Mach 4 -- but also Mach 3-class weapons. These could reach a target within 15 min., much faster than traditional cruise missiles. "That is a capability we really need," Wilcox said....

To make its point, the Pentagon will insert direction in its Fiscal 2006 Defense Planning Guidance -- the policy directive underlying the budget process -- in support of high-speed weapons. Although language to that effect existed before, this time it will be much more explicit to leave no doubt as to the interest of the civilian leadership.¹²

A third report from the same time period stated that

¹⁰Ibid, and Wall, Robert. Where Next? *Aviation Week & Space Technology*, October 20, 2003: 32.

¹¹Morris, Jefferson. Navy To Try Again For Hypersonic Missile ACTD In '04-05, Official Says. *Aerospace Daily*, October 15, 2003.

¹²Wall, Robert. Where Next? *Aviation Week & Space Technology*, October 20, 2003: 32.

Defense Department researchers increasingly see missile speed as an area for improvement in time-critical strikes and are interested in developing missiles that can fly several times the speed of sound....

A recent study from the Air Force and the Defense Advanced Research Projects Agency concluded that a primary shortfall in long-range precision engagement is the inability to strike heavily defended targets anywhere in the world on short notice, he said.

The Director of Defense Research and Engineering Ron Sega has been "hard charging" in the pursuit of hypersonic and supersonic weapons because high speed will "change the way we fight wars," said Sue Payton, deputy under secretary of defense for advanced systems and concepts.

"The value of speed, the need for speed, is something that our current DDR&E is very focused on, and he is gathering lots of support and we're hoping that this will be a real transformational capability of the future," she said at the conference.¹³

Past Navy Efforts. Navy officials reportedly have been interested in developing a high-speed strike weapon as far back as 1994, if not earlier. Reported efforts include the following:

- **Cheap Shot (1995).** In 1995, it was reported that the Navy would soon begin development work on a weapon called the "Cheap Shot" missile, which was a strike missile with a notional speed of Mach 3, a range of 500 nm with a 1,000-pound warhead or 700 nm with a 700-pound warhead, and a unit production cost of \$180,000. The Cheap Shot program, according to this report, was scheduled to be a Navy Advanced Technology Demonstration (ATD) program starting in FY1997 and costing about \$15 million. The effort was reportedly based in part on a 1994 science and technology report prepared for the CNO which stated that high-speed standoff weapons would be "crucial" to the success of strike operations.¹⁴
- **Fast Hawk (1996-1998).** In 1996-1998, the Navy studied a proposal – apparently an outgrowth of the Cheap Shot effort – for a high-speed strike missile called Fast Hawk with a speed of about Mach 4 and a range of more than 700 nm with a 750-pound warhead. The weapon would also be able to attack targets buried as much as 40 feet deep. Fast Hawk was to use a booster rocket and ramjet and employ a wingless, bending body about the same diameter (21 inches) and length (21 feet) as a Tomahawk. The estimated unit production cost of Fast Hawk was \$400,000. Fast Hawk was proposed for a 3-year Low-Cost Missile System (LCMS) ATD starting in FY1997 and costing about \$15 million. The Fast Hawk effort was cancelled in late 1998, reportedly due to rising costs, lack of money, and lack of a firm requirement or acquisition plan.¹⁵

¹³Ma, Jason. Hypersonic, Supersonic Weapons Becoming A DoD Research Priority. *Inside the Navy*, October 20, 2003.

¹⁴Duffy, Thomas. Navy Developing New Supersonic Strike Missile; Could Replace Tomahawk. *Inside the Navy*, March 27, 1995: 1, 6-7.

¹⁵USN Reveals Concept For Missile That Turns Corners. *Jane's Defence Weekly*, July 31, 1996:5; Surface (continued...)

- **HiSSM (1997).** In 1997, the Navy and DARPA expressed interest in the concept of a hypersonic missile called the High-Speed Strike Missile (HiSSM) with a speed of Mach 4 to Mach 8 (and a mean speed of Mach 6), a range of 600 nm to more than 700 nm, a warhead of about 500 pounds, a unit procurement cost under \$500,000, and an initial operational capability (IOC) around 2010.¹⁶
- **ARRMD (1997).** Also in 1997, DARPA reportedly began an effort to develop a low-cost high-speed missile, called the Affordable Rapid Response Missile Demonstrator (ARRMD) with a speed of Mach 3.5 to Mach 4, a minimum range of 400 nm, a 250-pound warhead, and a unit procurement cost of about \$200,000.¹⁷
- **HyStrike (1998).** In 1998, the Navy invited industry participation in a 6-year Hypersonic Weapons Technology (HWT) program to develop technologies for a family of affordable high-speed strike weapons. The first contracts under the effort were scheduled for FY1999. HWT was described as a special focus within ONR's Air and Surface Weapons Technology (ASWT) program, and was viewed as supporting a projected Hypersonic Strike (HyStrike) program envisioned for FY2000. The HyStrike effort focused on developing a weapon with a speed of Mach 3.5 to Mach 7 and a range of up to 600 nm.¹⁸
- **JSCM (2001).** In 2001, it was reported that the Navy was considering developing a new high-speed strike missile called the Joint Supersonic Cruise Missile (JSCM) with a speed of Mach 3 to Mach 4, a range of 500 nm, a total development cost of

¹⁵(...continued)

Warfare Boss Examines New Ways To Back Corps. *Navy News & Undersea Technology*, August 26, 1996: 5-6; Lok, Janssen. Fasthawk Aims To Overtake Tomahawk. *Jane's Defence Weekly*, April 16, 1997: 29; Fasthawk Missile Preliminary Design Review Set For May. *Inside the Navy*, April 28, 1997: 22; Cohen, Joshua T. Fasthawk Design Review Looks At Hydraulic And Heat Shield Issues. *Inside the Navy*, May 19, 1997: 15; Castelli, Christopher J. Confronting Rising Costs, Navy Cancels Fasthawk Technology Demo. *Inside the Navy*, November 30, 1998; Castelli, Christopher J. ONR Remains Mindful Of Need For Future High-Speed Strike Missile. *Inside the Navy*, December 28, 1998: 9. For more background on Fast Hawk, see

[<http://www.globalsecurity.org/military/systems/munitions/lcms.htm>]

¹⁶Navy Seeks Development Of High-Speed Missile. *Navy News & Undersea Technology*, August 18, 1997: 1, 8; Navy's Hypersonic Missile Could Change Strike Warfare. *Navy News & Undersea Technology*, September 1, 1997: 1, 8; Current Subsonic Missiles Lose To Future Needs. *Navy News & Undersea Technology*, September 22, 1997: 1, 8; Duffy, Thomas. Navy Eyeing Family Of Air-, Ship-Launched High-Speed Strike Missiles. *Inside the Navy*, September 22, 1997: 4-5.

¹⁷Berenson, Douglas. DARPA Looks To Develop Low-Cost Hypersonic Strike Missile. *Inside the Navy*, November 17, 1997: 4.

¹⁸US Navy Funds Technology For Hypersonic Strike Missile. *Jane's International Defense Review*, No. 5, 1998: 6. For more background on HyStrike, see

[<http://www.globalsecurity.org/military/systems/munitions/hystrike.htm>]

\$1 billion, and an IOC of 2012. The program at that point was not funded but was being considered for funding as an FY2002 Advanced Concept Technology Demonstration (ACTD).¹⁹

- **SHOC (2002).** In 2002, it was reported that the Navy and the Defense Threat Reduction Agency, potentially in combination with the United Kingdom, were planning an ACTD costing more than \$100 million to explore development of a high-speed strike missile called the Standoff High-speed Option for Counterproliferation (SHOC) with a speed of Mach 3.5 to 4.5, a range of at least 400 nm and preferably 600 nm, and a 200-pound warhead. The program was envisioned as commencing in 2004, with the goal of producing prototype test missiles plus 10 operational missiles by 2007, according to one report, or of starting system development and demonstration work in FY2008 and completing it in FY2012, according to another.²⁰
- **Ballistic missile (2003).** In August 2003, the Navy issued a request for information (RFI) for exploring possibilities for a submarine-launched intermediate-range ballistic missile (SLIRBM) capable of carrying either a conventional or nuclear warhead with a diameter of up to 32.5 inches and a length of up to 36 feet. The RFI also requested information about potential IRBM capabilities for surface ships.²¹ In October 2003, it was reported that a new Defense Science Board (DSB) report on the future of strategic strike recommends developing new weapons and payloads, including a conventionally armed medium- or intermediate-range ballistic missile for use by the Navy's Trident SSGN submarines and possibly Navy surface ships as well. The missile reportedly could have a payload of 2,000 pounds. According to the report, the DSB study began in March 2003 and was being briefed to DoD leaders in October 2003.²²
- **Hypersonic strike missile (2003-2004).** In October 2003, it was reported that the Navy hoped to start developing a hypersonic strike missile starting in FY2004 as an ACTD after failing to secure funding for such an effort in FY2003. The missile would have a speed of Mach 4 to Mach 5 and a range of 350 to 600 miles. The effort reportedly could use technologies being developed by the Navy and DARPA under the Hypersonics Flight (HyFly) Demonstration Program, which was scheduled

¹⁹Koch, Andrew. US Navy Could Field High-Speed Missile By 2012. *Jane's Defence Weekly*, June 6, 2001: 6. For more background on the JSCM (also abbreviated as JSSCM), see [<http://www.globalsecurity.org/military/systems/munitions/jsscm.htm>]

²⁰Koch, Andrew. USA, UK To Consider Supersonic Cruise Missile. *Jane's Defence Weekly*, May 1, 2002; Brown, Malina. Navy Considers DTRA'S Supersonic Cruise Missile As ALAM Candidate. *Inside the Navy*, October 7, 2002. For more background on SHOC, see [<http://www.globalsecurity.org/military/systems/munitions/shoc.htm>]

²¹Navy Issues RFI For SLIRBM Concept, Plans Technical Exchange Next Month. *Defense Daily*, August 27, 2003.

²²Ma, Jason. DSB Study Recommends Changes To Strategic Strike, SSGN Payloads. *Inside the Navy*, October 20, 2003.

to conduct a flight test of an experimental Mach 6 missile in FY2005.²³ According to the Navy Office of Legislative Affairs, the effort was not chosen as an FY2004 ACTD and is now a candidate for becoming an FY2005 ACTD.²⁴

These efforts appear to have informed the Navy's understanding of design tradeoffs and potential operational concepts for high-speed strike missiles. They also, apparently, have provided opportunities to develop engine technology and other technology that would go into such a weapon. The history of past Navy efforts in this area also suggests, however, that the Navy and/or DoD has repeatedly shied away from moving beyond conceptual and exploratory efforts to a firm acquisition program for developing and procuring an operational weapon.

Potential Oversight Issues for Congress. Potential oversight questions for Congress regarding a high-speed strike weapon for use by Navy surface combatants and attack submarines include the following:

- What are the Navy's current plans for acquiring a conventional, long-range, high-speed missile that would permit Navy surface combatants and submarines to attack distant time-sensitive targets?
- What are the potential operational risks of not having a surface- or submarine-launched high-speed missile for attacking distant time-sensitive targets?
- Why has the Navy in recent years repeatedly begun efforts to explore options for a conventional, long-range, high-speed strike weapon, but never committed to a firm acquisition program?
- What has the Navy learned, in terms of technology, understanding of design tradeoffs, and potential concepts of operation, from its past efforts to explore options for a conventional, long-range, high-speed strike weapon?
- In 1997, weapon developers believed the HiSSM high-speed cruise missile could be developed and fielded by 2010 – that is, in about 13 years. Today, 7 years later, how much closer is the Navy to being able to field an operational high-speed cruise missile like HiSSM?
- If a firm commitment were made, starting in FY2005, to a program for developing and procuring a conventional, long-range, high-supersonic/hypersonic cruise missile for use by surface combatants and attack submarines, in what year could the first production models be procured for operational use? How sensitive would this date be to changes in annual funding levels for the development effort?

²³Morris, Jefferson. Navy To Try Again For Hypersonic Missile ACTD In '04-05, Official Says. *Aerospace Daily*, October 15, 2003. For more background on HyFly, see [<http://www.globalsecurity.org/military/systems/munitions/hyfly.htm>]

²⁴Source: Telephone conversation with Navy Office of Legislative Affairs, February 24, 2004.

- What would be the potential total development cost and unit procurement cost for a conventional, long-range, high-supersonic/hypersonic cruise missile for use by surface combatants and attack submarines?
- Compared to a high-speed cruise missile, what are the relative advantages and disadvantages of a conventionally armed ballistic missile as a long-range, high-speed strike weapon?
- Are the efforts of various DoD departments and agencies – including the Navy, the Air Force, DARPA, and DTRA – to develop conventional, long-range, high-speed strike weapons sufficiently coordinated? Is there duplication of effort? Are departments or agencies competing against one another for funding that would be used to accomplish similar objectives? Is insufficient coordination between interested parties a reason why past efforts for such a weapon have not moved much beyond the preliminary development stage?

Relationship to ESG and SSG, DD(X) Destroyer, and Trident SSGN

A final point to note is that the issue of long-range strike weapons may have particular significance for 3 new Navy initiatives – the Expeditionary Strike Group (ESG) and Surface Strike Group (SSG), the DD(X) destroyer, and the Trident SSGN submarine. Each of these is discussed below.

ESG And SSG. The ESG is a new kind of naval formation built around the traditional Amphibious Ready Group (ARG). The traditional ARG was a collection of 3 amphibious ships, including a “large-deck” (i.e., LHA/LHD-type) amphibious assault ship, that together could embark a Marine Expeditionary Unit of about 2,200 Marines. An ESG is essentially an expanded ARG that also includes 3 surface combatants, 1 attack submarine, and land-based P-3 maritime patrol aircraft.

The ESG is at the heart of a Navy initiative, called the Global Concept of Operations, to significantly increase the number of independently deployable, strike-capable formations in the fleet. In the past, the Navy had 12 aircraft carrier battle groups (CVBGs) plus 12 ARGs that would often steam in the company of CVBGs. Under this arrangement, the Navy had 12 primary independently deployable, strike-capable formations – the 12 CVBGs. Under the new initiative, the CVBGs have been renamed carrier strike groups (CSGs), and some of the surface combatants previously assigned to CVBGs will now be assigned to ESGs. Under this arrangement, the Navy is to have 24 primary, independently-deployable, strike-capable formations – 12 CSGs and 12 ESGs.

The number of independently deployable, strike-capable formations is to be further increased through the formation of surface strike groups (SSGs), which are formations of 3 surface combatants. (Such formations were previously referred to as surface action groups, or SAGs.)

The purpose in increasing the number of independently deployable, strike-capable formations is to increase the Navy’s modularity and consequently its flexibility for responding to contingencies

of different kinds in various locations. The logic behind the initiative is that some contingencies might not require the full striking power of a carrier air wing, but might nevertheless require the presence of a Navy formation with some amount of strike capability.²⁵

Much of the CSG's strike potential is resident in the large air wing embarked on the carrier. This air wing can attack hundreds of targets per day with precision strike weapons, including all-weather, GPS-guided weapons such as the JDAM.

The ESG and SSG, in contrast, lack a large carrier air wing, so their long-range strike potential resides more heavily (in the case of the ESG) or exclusively (in the case of the SSG) on the weapons carried by their surface combatants and (in the case of the ESG) attack submarines. For this reason, the viability of the ESG and SSG as strike capable formations may be particularly influenced by whether they are armed with a full load of Tomahawks, or a low-cost supplement to the Tomahawk (such as the Affordable Weapon), or a conventional, long-range, high-speed strike missile for attacking time-sensitive targets, hardened targets, or deeply buried targets.

DD(X) Destroyer. A key mission for the proposed DD(X) destroyer is naval surface fire support (NSFS). This mission contributes substantially to the size and cost of the DD(X), particularly in terms of the ship being equipped with two large (155mm) naval guns.²⁶

The fleet's requirement for additional NSFS capability has been reviewed and revalidated periodically in recent years. But the advent of relatively inexpensive GPS-guided bombs, the new concept of air-delivered loitering munitions, and evolving notions of land warfare may lead to a renewed debate about the priority of NSFS compared to other investments, or about the amount of NSFS capability that will be needed in the future. If so, the justification for the DD(X), or for building all 24 of the DD(X)s currently planned, may become subject to debate.

In addition to carrying two guns, however, the DD(X) will also be equipped with 80 vertical launch system (VLS) tubes for launching missiles. If the value of the ship's 2 guns comes into question, then the justification for the DD(X) program might turn more heavily on the ship's other capabilities. This could lead to a stronger focus on the question of whether the DD(X)s, if built, would be armed with a full load of Tomahawk missiles, or a low-cost supplement to the Tomahawk, or a conventional, long-range, high-speed strike missile for attacking time-sensitive targets, hardened targets, or deeply buried targets.

Trident SSGN. One of the principal advantages that Navy officials cite about the Trident SSGN submarine is the large volume of payload space resident in its 24 large-diameter missile tubes, which can accommodate, among other things, up to 154 Tomahawks (7 Tomahawks for each of 22

²⁵For more on the ESG and the Global Concept of Operations, see CRS Report RS21338, *Navy Ship Deployments: New Approaches -- Background and Issues for Congress*, by Ronald O'Rourke. Washington, 2003. (Updated periodically) 6 pp.

²⁶For more on the DD(X) program, see CRS Report RS21059, *Navy DD(X) Future Surface Combatant Program: Background and Issues for Congress*, by Ronald O'Rourke. Washington, 2003. (Updated periodically) 6 pp; and CRS Report RS32109, *Navy Surface Combatant Acquisition Programs: Oversight Issues and Options for Congress*, by Ronald O'Rourke. Washington, 2003. (Updated periodically) 93 pp.

tubes, with the remaining 2 tubes used for storing equipment).²⁷ The operational cost-effectiveness of the SSGNs will depend in part on getting maximum use out of their payload space. Ensuring that SSGNs deploy with a full load of Tomahawks, acquiring a low-cost supplement to the Tomahawk, or acquiring a conventional, long-range, high-speed strike missile for attacking time-sensitive targets, hardened targets, or deeply buried targets, may be viewed as consistent with the goal of making maximum use of the SSGNs' large payload space.

Mr. Chairman, distinguished members of the subcommittee, this concludes my testimony. Thank you again for the opportunity to appear before you to discuss these issues. I will be pleased to respond to any questions you might have.

²⁷For more on the SSGN, see CRS Report RS21007, *Navy Trident Submarine Conversion (SSGN) Program: Background and Issues for Congress*, by Ronald O'Rourke. Washington, 2003. (Updated periodically) 6 pp.

**QUESTIONS AND ANSWERS SUBMITTED FOR THE
RECORD**

MARCH 3, 2004

QUESTIONS SUBMITTED BY MR. BARTLETT

Mr. BARTLETT. A total of more than 800 Tomahawks were fired during the Iraq war. As a result, the Navy's inventory of Tomahawk's, which was already somewhat low prior to the war, was reduced even further. The Navy's proposed budget requests 293 tactical Tomahawks in FY2005, compared to more than 400 per year in the remaining years of the FYDP.

What are the potential near-term operational risks of the current shortfall in the Tomahawk inventory?

Admiral FITZGERALD. The Navy has examined and adjusted its current operational requirements for Tomahawk after the Operation Iraqi Freedom expenditures. Current TLAM inventory levels are satisfactory to meet Global Naval Forces Presence Policy (GNFPP) requirements, but there is risk in the low overall inventory levels. An expenditure similar to Operation Desert Storm would deplete current inventory by half. Through aggressive inventory and shipload management, Navy is meeting GNFPP in-theater presence requirements. Maintaining the majority of the inventory on deployed or surge ships and submarines, and the remaining missiles at depots near loading facilities or airheads maximizes weapon availability to the war fighter and minimizes the operational risk.

Mr. BARTLETT. To what degree are ships now being deployed with empty vertical launch tubes because the Navy doesn't have enough Tomahawks to fill them?

Admiral FITZGERALD. The Navy is filling/meeting Tomahawk Global Naval Force Presence Policy requirements through continuous missiles cross-decking between Strike Groups.

Mr. BARTLETT. Under the Navy's plan, how quickly will the shortfall in the Tomahawk inventory be redressed?

Admiral FITZGERALD. Tomahawk inventory has been historically below the validated NNOR level and is currently at ~20% NNOR. At current programmed production, the Tomahawk inventory will approach ~70 percent of the NNOR in FY12 (assuming no expenditures). In light of competing priorities for resources, the profile in the FY05 President's Budget Request represents the best balance of available resources to requirements.

Mr. BARTLETT. Given the current production capacity for Tactical Tomahawks, can more than 293 Tactical Tomahawks be procured in FY2005? What is the maximum number that can be procured in FY2005 without exceeding the current annual production capacity?

Admiral FITZGERALD. Yes, more than 293 Tactical Tomahawks can be procured in FY2005. If additional funds (up to \$141M) were provided, up to 163 missiles could be added to the planned procurement quantity for a total buy of 456 missiles in FY2005.

Mr. BARTLETT. The Tomahawk and the Tactical Tomahawk are excellent long-range strike weapons, but they are fairly expensive. The Tactical Tomahawk's projected unit cost of less than \$600,000, though only half that of the earlier Tomahawk, is still roughly 30 times the cost of an air-delivered JDAM. In contrast, the new Affordable Weapon, which can attack some targets that currently might be attacked with Tomahawks, may have a unit cost of less than \$50,000—far less than the cost of a Tactical Tomahawk, and only about 2 and a half times the cost of a JDAM.

Given the relative high cost of the Tactical Tomahawk, the current Tomahawk inventory shortfall, limits on Navy budgets, and the much lower cost of the Affordable Weapon, what role does the Navy see the Affordable Weapon playing in its future planning for ship-launched long-range strike weapons?

Admiral FITZGERALD. The Navy is utilizing FY04/FY05 funds to evaluate AWS, as currently developed by Titan, against existing Navy requirements. Following the completion of the FY04/05 efforts, the Navy will decide whether or not to pursue AWS as a Strike Weapon Program of Record, based on warfighting requirements, weapon performance, produceability, actual manufacture costs, demonstrated capability and shipboard suitability.

Mr. BARTLETT. If the Affordable Weapon can attack some targets that would otherwise be attacked by the Tomahawks, but can do so at a fraction of the cost of a

Tomahawk, doesn't that argue in favor of procuring the Affordable Weapon as a supplement to the Tomahawk?

Admiral FITZGERALD. The actual weapon cost, mission effectiveness, and survivability of AWS have not been assessed. With respect to weapon cost, Titan has proposed a 1,000 missile quantity cost of approximately \$55K per missile and a 100 missile quantity cost of approximately \$91K per missile. NAVAIR estimated cost is \$150K per missile. The initial proposal from Titan for the 20 missiles under the FY04 contract, was \$150K per missile. As we went to contract, Titan increased the cost to \$290K per missile. All costs are based on the Titan designated missile baseline. All missile unit costs do not include a warhead. Part of the ongoing evaluation is to determine what the final unit cost of the AWS missile integrated into a Navy shipboard environment will be.

With respect to mission effectiveness and survivability, the FY04/05 plan funds evaluation in these areas. An informed recommendation of the role of the Affordable Weapon within the Navy combat forces will be made based on the results of this evaluation.

Mr. BARTLETT. Why isn't the Navy moving more quickly to include the Affordable Weapon in its procurement plans?

Admiral FITZGERALD. The Navy has implemented an aggressive program to assess the performance of the missile and system components over the next 18 months. The Navy will validate the producibility and verify Contractor cost estimates for the system. The necessary shipboard requirements for deployment will be evaluated and any shortfalls or risks associated with compliance to these requirements will be identified to assist Navy leadership in making an informed decision about the missiles' future use.

Mr. BARTLETT. The Tomahawk and the Affordable Weapon, though capable systems, are subsonic weapons that can take an hour or more to reach distant targets. Navy surface ships and submarines currently lack a high-speed missile for attacking distant targets on a time-urgent basis. The Navy in recent years has explored technologies for such a missile, but currently has no definite program for acquiring one in the near future.

What are the Navy's current plans for acquiring a high-speed missile that would permit Navy surface combatants and submarines to attack distant targets on a time-urgent basis?

Admiral FITZGERALD. Recent analysis has shown that a Mach 2-3 missile launched from surface ships and submarines, capable of traveling 600 nm would meet Navy needs against time-urgent targets. An engineering feasibility and cost analysis of missile design options is a POM-06 issue.

Mr. BARTLETT. What are the potential operational risks of not having a ship-launched missile for attacking distant targets on a time-urgent basis?

Admiral FITZGERALD. Striking distant time urgent targets requires either maintaining strike aircraft in relative close proximity to a target area or a high speed weapon to be able to strike targets of this type in the relatively small time window that they present. Maintaining the continual presence of strike aircraft produces a high operation cost in the use of tanking assets and the loss of use of the strike asset for other missions. It is also plausible that in the early stages of a conflict that the risk may be so great for manned aircraft to perform this mission that only a high speed weapon would be considered.

Mr. BARTLETT. Why is the Navy not moving more quickly to fill this gap in its capabilities?

Admiral FITZGERALD. Earlier studies indicated a need for weapon speeds in excess of Mach 6. Technologies were not available to support such speeds and the Navy has invested in developing those technologies. A more recent study using up-dated threat information and Navy force structure estimates, indicate that these higher speeds are not needed. The optimum approach to fill this capability gap is a balance among Intelligence Surveillance and Reconnaissance assets, computer network attack, a high-speed strike missile, and theater air and missile defense capabilities. The Navy is currently investing in all four areas, but until the optimum balance is known there is no justification for any major change in these investments.

Mr. BARTLETT. How do new transformation-related concepts, such as the sea basing concept for launching, directing, and supporting inland expeditionary operations directly from bases at sea, change requirements for sea-based conventional long-range strike capabilities?

Admiral FITZGERALD. Sea basing of conventional long-range strike aircraft and missile systems should allow for greater aircraft survivability and persistence due to a decrease in range to the majority of the threat target set. The enhanced sortie rate and flexibility inherent in the CVN-21 design and the increased utilization of

STOVL aircraft from sea-based platforms will greatly enhance Naval contribution to joint strike capabilities.

Mr. BARTLETT. In reference to a question which stated: "Admiral, I understand the Tactical Air Integration Plan will retire older fighter aircraft early and decrease procurement of new fighters, and that capability will be maintained by operating more jointly with the Marine Corps. How can operating more jointly make up for the loss of almost 500 aircraft?"

Admiral FITZGERALD. We are accelerating our transition out of F14's as part of an overall Naval Aviation strategy designed to balance the needs to recapitalize, manage operating costs and sustain the legacy fleet. Accordingly, we are seizing the opportunity to retire an expensive and hard to maintain platform as soon as feasible. As far as the legacy F/A-18 fleet, we will need to maintain that platform and keep it relevant until replaced by the JSF.

We are able to absorb the reduction in aircraft from a number of different efficiencies. First, expanded integration with the Marine Corps strengthens inter-service ties and allows the Department to maintain current ability to answer national tasking with three fewer active squadrons, while additionally precluding the requirement to buy back four squadrons worth of aircraft represented by Marine squadrons presently integrated into Navy carrier air wings. Through the global sourcing concept, this smaller active force structure will actually be more capable of answering operational tasking by utilizing available forces, whether Navy or Marine. Secondly, we are reducing the number of aircraft assigned to operational squadrons, a benefit of the significantly enhanced individual capabilities of the F/A-18E/F and JSF's. Tomorrow's air wing will enjoy far greater lethality across the spectrum of conflict with fewer aircraft because of superior capability, reliability and readiness rates. Finally, we are lowering our overhead procurement through improved depot practices, greater aircraft endurance and reliability, greater fidelity of simulation, and through application of realistic attrition rates.

Mr. BARTLETT. Through your Tactical Air Integration Plan, you hope to increase aircraft effectiveness by increasing the likelihood of being able to afford modernization programs, and ancillary equipment like targeting pods. What sorts of investments do you foresee to turn this likelihood into reality?

Admiral FITZGERALD. The President's budget fully provides for the modernization programs required to increase legacy aircraft effectiveness to required levels. The Advanced Targeting Forward Looking Infrared program is funded to required levels, as are the Multi-functional Information Distribution System and Joint Helmet Mounted Cueing System. Additionally, we are finally on track to fix Hornet ancillary equipment (includes external tanks, pylons and weapons rails), this year's budget will have this program corrected with procurement in fiscal year 2006 (delivery in fiscal year 2008).

Mr. BARTLETT. The JSF program has experienced some bumps in the road lately. It is overweight, and behind schedule. Aren't you concerned that by reducing the Navy's and Marine Corps' purchase of the JSF so drastically (almost 30%) that you will add to the program's problems in terms of increased unit cost?

Admiral FITZGERALD. The cost increases due to JSF quantity reductions (from 1089 to 680 aircraft) were reflected in last year's budget submission and the related December 2002 Selected Acquisition Report. While unit cost is constantly a focus of JSF acquisition, our overall plan for recapitalization supports the Department of the Navy's TACAIR Integration Plan. Briefly, this includes the JSF replacing Navy F-18A/C variants and Marine Corps' AV-8B Harrier and F/A-18A/C/D aircraft while complementing the Navy's F/A-18E/F Super Hornet. Increased lethality, survivability and supportability of JSF and F/A-18E/F enable the services to modify the TACAIR force structure, reducing both JSF and F/A-18E/F procurement quantities. Integration reduces total TACAIR inventory requirements and operating/overhead costs while creating recapitalization trade space. The TACAIR Integration plan, of which the JSF is a key component, provides a path to greater combat capability through efficient use of all available DoN resources. This plan maximizes forward deployed combat power and optimizes the core capability of Naval aviation forces that are provided to Combatant Commanders in support of joint operations.

Mr. BARTLETT. Admiral, I know that the Navy has not yet decided what mix of STOVL and CV Joint Strike Fighter it plans to buy. These questions are important to long-range conventional strike because the aircraft offer different capabilities in terms of range, cost, bring-back constraints, and basing flexibility. What do you see as the advantages and disadvantages of the STOVL or CV variant and how do you see the implications for long-range conventional strike.

Admiral FITZGERALD. Each Service has distinct operational and employment concepts and JROC validated requirements. The Joint Strike Fighter will replace less

capable legacy systems with a much more capable weapons system for both services. The Marine Corps' STOVL variant, replaces AV-8B and F/A-18A, C and D variants. STOVL Joint Strike Fighter is capable of expeditionary employment either aboard amphibious shipping or shore fields. It combines the multi-role versatility of the F/A-18 and the basing flexibility of the AV-8B. The Navy's CV variant features aircraft carrier compatible systems to interface with catapult and arresting gear and features exceptional range and endurance performance. CV Joint Strike Fighter replaces Navy F/A-18C's and complements the F/A-18E/F and EA-18G in providing long range strike capability and much improved persistence over the battlefield. The Joint Strike Fighter will enhance the Department of the Navy's precision strike capability with unprecedented stealth, range, sensor fusion, improved radar performance, combat ID and electronic attack capabilities compared to legacy platforms.

Mr. BARTLETT. General Moseley, considering the great contribution the B-1 has made in both Afghanistan and Iraq, why does the Air Force believe that retiring 32 of these aircraft prematurely is the right course of action?

General MOSELEY. In June of 2001 when the decision was made to retire 32 B-1s, the Air Force was facing a shortfall of nearly \$2 billion in the B-1 modernization program. Based on analysis and inputs from warfighters who indicated they would rather have a fleet of 60 fully modernized, combat-capable B-1s than a marginally capable, increasingly unsupportable fleet of 92, the Air Force leadership decided to retire 32 B-1s and apply the savings to B-1 modernization. The plan has been a success. The B-1 is now funded for every necessary upgrade to enable it to participate in all phases of conflict now and in the future. Congress has recently directed that the USAF buy-back B-1s into the fleet. We have determined that bringing 7 aircraft back will alleviate some fleet management risk for the longterm sustainment of the B-1 to include attrition reserve, test and training aircraft. Further additions to the fleet above the 7 we are bringing back, however, will jeopardize B-1 modernization and will provide no needed combat capability.

Mr. BARTLETT. General Mosley, the Air Force says it can't afford to modernize "everything at once" but isn't there a need to invest in a new bomber to replace the 40 year old B-52s sooner than the 2012-2015 timeframe?

General MOSELEY. No. After reviewing/completing a number of Long Range Strike studies in the last few years, the Air Force has concluded that modernizing the existing bomber force offers adequate capabilities in the near term. In conjunction with the legacy bomber modernization, the Air Force is making the necessary Science & Technology (S&T) investments now for the 2012-2015 start of a new long range strike acquisition program that will develop a mid-term long range strike weapon system capability. For the long term, the Air Force will continue to examine hypersonic, exo-atmospheric, and other technologies to assess their applicability with regard to a future long-range strike responsive capability.

Mr. BARTLETT. Mr. Bolkom described how the Air Force has totally dominated its adversaries over the past decade, a commendable achievement by the Air Force. Are 276 F/A-22s all that you need to continue this track record?

General MOSELEY. The Air Force conducted an in-depth study of the F/A-22 in 2002, to include a force structure assessment. The Air Force considered, based in part on its study findings, that a minimum of 381 F/A-22 were required to meet the Defense Planning Guidance with an acceptable level of risk. If the number of F/A-22s is reduced below 381, risk increases for all U.S. forces and the capability to maintain a supportable rotation for the needs of 10 improved Air Expeditionary Forces defined as including the Air Force's recommended complement of one 24-aircraft F/A-22 squadron each is jeopardized.

Mr. BARTLETT. If you protected Air Force JSFs with a stand-off jamming aircraft, like the EA-18G, wouldn't these aircraft be survivable in tomorrow's most threatening scenarios?

General MOSELEY. Taking a near-peer nation as the projected adversary, it can be said that any aircraft flying into hostile territory benefits from standoff jamming. This is a general statement and not meant to fit every scenario.

With that being said, standoff jamming needs to be defined and quantified. The definition of "standoff jamming" is a jamming platform which never enters a threat envelope. Depending on the threat, this envelope can be in miles, tens of miles, and with new anti-access threats, hundreds of miles.

Similarly, the Airborne Electronic Attack System-of-Systems, when operational, will achieve even greater synergistic effects. With the B-52 standoff jamming, the EA-18G close in jamming, the EC-130H Compass Call communication jamming, the Miniature Air Launched Decoy (MALD)-J penetration jamming in concert with deep reach Electronic Attack Joint, Unmanned, Combat Aerial Vehicle, and the striker Advanced Electronically Scanned Array (AESA) on board capabilities, future aircraft survivability will continue to improve.

However, all these off-board efforts only increase a particular aircraft's survivability, and cannot be compared to the survivability of other aircraft without similar off-board protection measures. The Joint Strike Fighter will be very capable, but their survivability cannot be guaranteed against the advanced threats they will face in the future.

Mr. BARTLETT. Can you tell me when the Air Force will complete its next study of aerial refueling requirements? Will it consider how fielding UAVs might reduce our tanker needs?

General MOSELEY. The Office of the Secretary of Defense/Joint Chiefs of Staff (JCS) is currently the only agency conducting a study concerning future aerial refueling requirements. The Mobility Capabilities Study is scheduled for completion in March 2005 and will address tanker requirements based on current and projected JCS planning guidance. The study will use the 1-4-2-1 scenario to develop tanker requirements and will not specifically focus on the requirements for receiver refueling by aircraft type, but rather the requirements to achieve the desired capabilities. Unmanned aerial vehicle refueling is currently in its infancy and any future requirements would be speculative at this time.

Mr. BARTLETT. Mr. Bolkom's written statement says that the Air Force spends 276 times more on fighter aircraft procurement than bomber procurement. Is this the right balance for today and throughout the future year defense program?

General MOSELEY. The Air Force budget is properly balanced to achieve the best combat capability from all our aircraft. The Air Force apportions its resources based on capabilities produced, not on arbitrary dollar ratios between aircraft or mission areas. Based on the FY05 President's Budget, our fleet of approximately 2200 Primary Mission Aircraft Inventory (PMAI) fighters is 17 times as large as our bomber fleet of 130 PMAI aircraft and receives about 16 times as much procurement funding in FY05-09. The ratio of fighter to bomber procurement does not reflect our commitment to one fleet over another. Because we cannot afford to modernize every aircraft at once, the Air Force must carefully manage its re-capitalization programs to remain within its budget. In the mid-1990s, we spent more on bomber procurement than fighter procurement as we produced and fielded the B-2 bomber. Currently, F/A-22 production is the largest single component of our aircraft procurement funding and swings the pendulum temporarily towards fighters. Across the Future Years Defense Plan (FYDP), the Air Force's investment in its fighter and bomber forces is optimally balanced to maximize the capability of the combat forces provided to the Unified Combatant Commanders.

Mr. BARTLETT. If we were to invest more in long-range bombers, and less in theater-range aircraft, would that impact our aerial refueling requirements?

General MOSELEY. The Air Force periodically reviews its Global Strike and Global Persistent Attack capability requirements, and makes any necessary adjustments to its combat forces mix to optimize capabilities. Air refueling requirements is one of many variables (e.g., forward basing, sortie rates, responsiveness and persistence demands, size of the theater of operations, aircraft performance, etc.) considered in optimizing combat capabilities to win a conflict anywhere in the world. The optimum force mix and associated refueling requirements vary from region to region.

Mr. BARTLETT. CRS projects that the B-2 will be able to carry more than 320 small diameter bombs. If our modernized B-2 force can service more targets, will such capability have an impact on Joint Strike Fighter or F/A-22 procurement?

General MOSELEY. The Air Force does not plan to integrate the small diameter bomb on the B-2 at this time, and in any case the weapons load would fall well below the 320-weapon quantity mentioned in the question. The Air Force seeks to match munitions and delivery systems to optimize capabilities. From a capabilities standpoint, the B-2, F/A-22, and Joint Strike Fighter provide separate, complementary capabilities to the Combatant Commander. For example, the B-2 can carry a large payload, but its relatively small fleet size limits its distributed capabilities. Conversely, the numbers of F-35s will enable the Combatant Commander to service targets over a wide portion of the theater simultaneously, but the F-35 will not be able to carry larger munitions that fit in the B-2. From a capacity and capability perspective, reduced procurement of the F/A-22 and the Joint Strike Fighter would reduce the overall ability of the Air Force to provide stealthy, dominant, 24/7 persistence in the battlespace which, in turn, would increase risk to other platforms to include the B-2. The F/A-22 is a critical force enabler and will ensure air dominance in future anti-access environments against advanced air-to-air and air-to-ground threats. The Joint Strike Fighter will hold targets at risk in heavily defended areas, day or night. The current F/A-22/Joint Strike Fighter force mix optimally balances affordability, capability, and force structure for 24/7 stealth operations.

Mr. BARTLETT. General Zettler and General Essex testified before this committee last summer that the KC-135Es are old, and unpredictable. They said that the KC-135Es could have a catastrophic mishap at any time, and the whole fleet could be grounded. Aren't you concerned about this happening to the B-52?

General MOSELEY. The Air Force continually strives to ensure all of its aircraft remain airworthy and safe for our Airmen to fly. Because the B-52s were tasked to support Strategic Air Command's Single Integrated Operational Plan, several structural modifications were completed to ensure the B-52 could safely fulfill the low-level mission required by the Single Integrated Operational Plan. Consequently, the B-52s sitting on the flight line today are not the same aircraft that came off the assembly line in 1962. Additionally, the Air Force has a sound, proactive Aircraft Structural Integrity Program that identifies, early on, potential aircraft structural or subsystem problems so we can remedy them before impacting aircraft safety.

Mr. BARTLETT. What would happen to our long-range strike capabilities if the whole B-52 fleet were grounded? Also, if you are going to modify some B-52s to conduct standoff jamming, wouldn't that mission be jeopardized by a fleet wide grounding also?

General MOSELEY. Yes, grounding the entire B-52 would adversely impact long-range strike capabilities and future standoff jamming capabilities. However, the probability of a fleet-wide grounding is low due to the Aircraft Structural Integrity Program that identifies, early on, potential aircraft structural or subsystem problems so we can remedy them before impacting aircraft safety. This ensures the B-52 continues to be a safe and reliable weapon system. Additionally, the Air Force's system-of-systems capabilities approach helps ensure grounding of a single type of aircraft might reduce, but would not necessarily prevent, the Air Force from conducting long-range strike and airborne electronic attack missions; other systems could perform those missions.

Mr. BARTLETT. One notable Air Force transformation story is the use of the B-52 to conduct close air support missions with Precision Guided Munitions (PGMs). Should we be emphasizing these sorts of transformational capabilities in the B-1 and B-2 force as well?

General MOSELEY. While continuing to ensure our bombers are capable of performing strategic missions, the Air Force has expanded the types of conventional missions our bombers can perform; and appreciates the importance of integrating guided, precision weapons onto bombers due to their range, payload, and loiter capabilities. During Operations ENDURING FREEDOM and IRAQI FREEDOM, both B-1s and B-52s routinely performed close air support missions with the GPS aided Joint Direct Attack Munition and Wind Corrected Munitions Dispenser. In these conflicts, B-1s, B-2s, and B-52s provided lethal, responsive, persistent firepower to ground forces when and where required. On one such occasion, during a violent sandstorm, B-1s and B-52s, in concert with an Air Force ground controller, decimated Iraqi ground forces that had encircled U.S. troops and were seriously threatening their survival.

As the Air Force is equipping the entire bomber fleet to employ a variety of guided weapons, it is also transforming the way in which bomber crews train to ensure they are able to effectively operate in the dynamic close air support environment. In addition to adding other advanced weapons on all three bombers, modernization efforts include integrating targeting pods on the B-1 and B-52 to enhance their capability to positively identify targets prior to weapons release and installing Link-16 Tactical Data Link on all three bombers. Link-16 will provide our bombers networked tactical battlespace situational awareness, allowing for improved survivability and flexible retargeting, and the ability to pass data reliably, quickly, and more efficiently.

Mr. BARTLETT. General Moseley, we've heard from both the Chief and the Secretary that an FB-22 may provide some capabilities to conduct long-range conventional strike.

- Please describe your views on the FB-22.

General MOSELEY. We will continue to modernize our legacy bombers until such time as capability requirements dictate the need for a new system. For instance, proliferation of advanced threat systems such as the SU-27, SU-30, SA-20 and S-400 could present survivability challenges for our legacy platforms and could limit their capability to respond and/or persist in the battlespace of the future. The FB-22 derivative concept is merely one option identified as a potential capability to provide a "bridge" between the legacy bomber force and the fielding of a new longrange strike capability downstream. A new system would take full advantage of today's available technology to provide a stealthy, persistent, responsive platform capable of defending itself against the full spectrum of advanced threats, day or night. This

new system would have range, payload, and loiter capabilities somewhere between those of fighters and bombers, and would complement both.

Mr. BARTLETT. General Moseley, we've heard from both the Chief and the Secretary that an FB-22 may provide some capabilities to conduct long-range conventional strike.

- Are there funds in the future years defense plan programmed for the development or procurement of the FB-22?

General MOSELEY. To date, the Air Force has committed funds to stand up a Long-range Strike Office; that office will be charged with identifying a platform or platforms that could meet the Air Force's capability requirements. Assessments of alternatives will determine capability cost trades to determine an affordable solution set and the Air Force will establish funding priorities to achieve these capabilities.

Mr. BARTLETT. General, it appears that the Air Force is pursuing one strategy for stand off jamming, with its EB-52 concept, the Navy another with its EA-18G, and the Marine Corps is still making its plans. Does the Joint Staff have a view on this strategy?

General CARTWRIGHT. The Air Force concept calls for B-52s to conduct stand off jamming outside known surface-to-air missile (SAM) lethal ranges, to defeat an enemy's ability to detect and discern strike force intentions during initial penetration into denied airspace.

The Navy concept calls for the EA-18G to conduct stand off jamming and modified escort jamming, across a broader frequency range than the B-52, and have the sensing capability to support reactive jamming and suppression of enemy air defenses with high speed antiradiation missiles.

The Marine Corps is exploring the option of upgrading their EA-6B aircraft, but no decision has been made.

The Air Force proposal provides a persistent standoff jamming capability with global reach. The Navy envisions EA-18Gs providing a rapid response capability; able to conduct both stand off and escort jamming along with the ability to kinetically destroy SAM radar sites. The Joint Staff views no single platform or jamming system as capable of addressing all target sets, in all contingencies and scenarios. Therefore, B-52 stands off jamming and EA-18G aircraft are important and complementary components of the Joint Force.

Mr. BARTLETT. General, how strong a planning factor is access to forward bases in future warfighting scenarios? What kind of conflicts can we win with no forward bases? Could we have defeated Iraq if we were totally shut out of regional bases?

General CARTWRIGHT. Our global strike concept of operations, rotational forward presence, and access to forward bases afloat and ashore, when combined with our strategic mobility triad of airlift, sealift, and pre-positioned material, is an important joint force capability.

The absence of forward bases increases the demands placed upon our global reach, global strike, and rotational forward presence forces, but does not prevent us from completing our mission.

Defeating Iraq was a multinational coalition operation involving all three legs of the mobility triad to project and sustain global strike and rotational forward presence forces. In the absence of forward bases ashore, we would have employed our strategic air and sealift to enable movement to the objective, increased our global strike sorties, and expanded our operations from the sea to complete the mission within an acceptable level of risk.

Mr. BARTLETT. General, if we didn't have enough money to invest in bombers, navy strike aircraft, and cruise missiles, all at the same time, which should we emphasize to make sure that we have the right capabilities to succeed in scenarios without access to forward bases?

General CARTWRIGHT. In the absence of forward bases ashore, our ability to conduct a long-range strike relies upon the complementary capabilities of our global strike capability and rotational forward presence forces.

Within that construct, bombers provide global reach with large ordnance loads against fixed and mobile targets. Navy strike aircraft provide rapid response, with moderate ordnance loads against fixed and mobile targets. Cruise missiles provide the ability to attack fixed and relocatable targets within denied airspace.

Not knowing the circumstances of the next conflict, the capabilities that bombers, naval strike aircraft and cruise missiles provide enables the joint force commander to rapidly set conditions for follow-on operations. The Joint Staff sees their complementary and interdependent strike capabilities as key to ensuring the joint force can gain the initiative and swiftly defeat the effort of an adversary.

Mr. BARTLETT. Mr. O'Rourke, in your testimony you discuss the option of the Navy developing and acquiring a high-speed ship- or submarine-launched missile for attacking distant targets. What might such a weapon look like?

Mr. O'ROURKE. Based on press reports of past efforts for developing a high-speed ship- or submarine-launched missile, such a weapon might:

- have a speed of Mach 3.5 to Mach 8;
- have a range of 350 nautical miles (nm) to 1,200 nm;
- have a warhead weighing 250 pounds to 700 pounds;
- be propelled by either a ramjet, a supersonic combustion ramjet (scramjet), or a pulse detonation engine;
- use a combination of GPS and inertial guidance;
- have a terminal accuracy of 3 meters to 10 meters Circular Error Probable (CEP);
- be capable of penetrating 30 feet to 50 feet of concrete; and,
- be no more than 21 inches in diameter and 21 feet long, so as to be suitable for launching from Mk 41 vertical launch system (VLS) tubes on Navy cruisers, destroyers, and attack submarines.

Such a weapon, or a variant of such a weapon, might also be suitable for launching from Air Force bombers and Air Force, Navy, and Marine Corps strike fighters, particularly if its total weight is 2,000 pounds or less. An air-launched variant might be shorter and lighter, and consequently have a shorter range, than a ship- or submarine-launched variant.

Mr. BARTLETT. What would be the operational value of such a high-speed strike missile compared to the Tomahawk? What kinds of targets might be suitable for such a missile?

Mr. O'ROURKE. A high-speed strike weapon would offer at least three potential operational advantages compared to a subsonic cruise missile like Tomahawk—an ability to attack time-sensitive targets, an ability to attack hardened or deeply buried targets, and enhanced weapon survivability against enemy defenses.

Regarding time-sensitive targets, DoD officials have stated that a ship-launched Mach 6 cruise missile could strike a target 500 nm away in 7 minutes, which is about one-ninth the time that a Tomahawk would require. Notional examples of time-sensitive targets include terrorists or high-value military forces that have temporarily exposed themselves to U.S. sensors but could move beyond the view of those sensors in a matter of a few minutes, or enemy missiles armed with nuclear, chemical, or biological weapons that appear to be in the final stages of being made ready for launch. Exactly how time-sensitive such targets might be is not clear, but U.S. officials have suggested that in some cases, the desired total time from target detection to target destruction might be on the order of “single-digit minutes.”

Regarding hardened or deeply buried targets, hypersonic weapons reportedly can penetrate surfaces three times deeper than subsonic penetrating weapons. Press reports on studies for high-speed cruise missiles suggest that such a weapon might be able to penetrate 30 feet to 50 feet of concrete. Notional examples of hardened or deeply buried targets include command centers, high-value conventional military systems, or facilities for researching, manufacturing, or storing nuclear, chemical, or biological weapons.

Regarding weapon survivability, high speed can reduce the chances of the weapon being detected and countered. An increase of 1.8 Mach points in speed, for example, reportedly is equivalent in terms of weapon survivability to an order-of-magnitude reduction in the weapon's radar cross section.

Mr. BARTLETT. Has the Navy done any work in the past to explore options for a high-speed strike missile?

Mr. O'ROURKE. The Navy since the mid-1990s has on several occasions explored options for a high-speed strike missile. Some of these efforts were undertaken in conjunction with other DoD agencies such as DARPA. Past examples of such efforts include the following:

- **Cheap Shot (1995).** In 1995, it was reported that the Navy would soon begin development work on a weapon called the “Cheap Shot” missile, which was a strike missile with a notional speed of Mach 3, a range of 500 nm with a 1,000-pound warhead or 700 nm with a 700-pound warhead, and a unit production cost of \$180,000. The Cheap Shot program, according to this report, was scheduled to be a Navy Advanced Technology Demonstration (ATD) program starting in FY 1997 and costing about \$15 million. The effort was reportedly based in part on a 1994 science and technology report prepared for the CNO which stated that high-speed standoff weapons would be “crucial” to the success of strike operations.
- **Fast Hawk (1996-1998).** In 1996-1998, the Navy studied a proposal apparently an outgrowth of the Cheap Shot effort—for a high-speed strike missile called Fast Hawk with a speed of about Mach 4 and a

range of more than 700 nm with a 750-pound warhead. The weapon would also be able to attack targets buried as much as 40 feet deep. Fast Hawk was to use a booster rocket and ramjet and employ a wingless, bending body about the same diameter (21 inches) and length (21 feet) as a Tomahawk. The estimated unit production cost of Fast Hawk was \$400,000. Fast Hawk was proposed for a 3-year Low-Cost Missile System (LCMS) ATD starting in FY 1997 and costing about \$15 million. The Fast Hawk effort was cancelled in late 1998, reportedly due to rising costs, lack of money, and lack of a firm requirement or acquisition plan.

- **HiSSM (1997).** In 1997, the Navy and DARPA expressed interest in the concept of a hypersonic missile called the High-Speed Strike Missile (HiSSM) with a speed of Mach 4 to Mach 8 (and a mean speed of Mach 6), a range of 600 nm to more than 700 nm, a warhead of about 500 pounds, a unit procurement cost under \$500,000, and an initial operational capability (IOC) around 2010.
- **ARRMD (1997).** Also in 1997, DARPA reportedly began an effort to develop a low-cost high-speed missile, called the Affordable Rapid Response Missile Demonstrator (ARRMD) with a speed of Mach 3.5 to Mach 4, a minimum range of 400 nm, a 250-pound warhead, and a unit procurement cost of about \$200,000.
- **HyStrike (1998).** In 1998, the Navy invited industry participation in a 6-year Hypersonic Weapons Technology (HWT) program to develop technologies for a family of affordable high-speed strike weapons. The first contracts under the effort were scheduled for FY 1999. HWT was described as a special focus within ONR's Air and Surface Weapons Technology (ASWT) program, and was viewed as supporting a projected Hypersonic Strike (HyStrike) program envisioned for FY2000. The HyStrike effort focused on developing a weapon with a speed of Mach 3.5 to Mach 7 and a range of up to 600 nm.
- **JSCM (2001).** In 2001, it was reported that the Navy was considering developing a new high-speed strike missile called the Joint Supersonic Cruise Missile (JSCM) with a speed of Mach 3 to Mach 4, a range of 500 nm, a total development cost of \$1 billion, and an IOC of 2012. The program at that point was not funded but was being considered for funding as an FY2002 Advanced Concept Technology Demonstration (ACTD).
- **SHOC (2002).** In 2002, it was reported that the Navy and the Defense Threat Reduction Agency, potentially in combination with the United Kingdom, were planning an ACTD costing more than \$100 million to explore development of a high-speed strike missile called the Standoff Highspeed Option for Counterproliferation (SHOC) with a speed of Mach 3.5 to 4.5, a range of at least 400 nm and preferably 600 nm, and a 200-pound warhead. The program was envisioned as commencing in 2004, with the goal of producing prototype test missiles plus 10 operational missiles by 2007, according to one report, or of starting system development and demonstration work in FY2008 and completing it in FY2012, according to another.
- **Hypersonic strike missile (2003-2004).** In October 2003, it was reported that the Navy hoped to start developing a hypersonic strike missile starting in FY2004 as an ACTD after failing to secure funding for such an effort in FY2003. The missile would have a speed of Mach 4 to Mach 5 and a range of 350 to 600 miles. The effort reportedly could use technologies being developed by the Navy and DARPA under the Hypersonics Flight (HyFly) Demonstration Program, which was scheduled to conduct a flight test of an experimental Mach 6 missile in FY2005. According to the Navy Office of Legislative Affairs, the effort was not chosen as an FY2004 ACTD and is now a candidate for becoming an FY2005 ACTD.

These efforts appear to have informed the Navy's understanding of design trade-offs and potential operational concepts for high-speed strike missiles. They also, apparently, have provided opportunities to develop engine technology and other technology that would go into such a weapon. The history of past Navy efforts in this area also suggests, however, that the Navy and/or DoD has repeatedly shied away from moving beyond conceptual and exploratory efforts to a firm acquisition program for developing and procuring an operational weapon.

Mr. BARTLETT. How do the Affordable Weapon and a high-speed strike missile relate to the Navy's plans for deploying Expeditionary Strike Groups?

Mr. O'ROURKE. The ESG is a new kind of naval formation built around the traditional Amphibious Ready Group (ARG). The traditional ARG was a collection of 3 amphibious ships, including a "large-deck" (i.e., LHA/LHD-type) amphibious assault ship, that together could embark a Marine Expeditionary Unit of about 2,200 Marines. An ESG is essentially an expanded ARG that also includes 3 surface combatants, 1 attack submarine, and land-based P-3 maritime patrol aircraft.

The ESG is at the heart of a Navy initiative, called the Global Concept of Operations, to significantly increase the number of independently deployable, strike-capable formations in the fleet. In the past, the Navy had 12 aircraft carrier battle groups (CVBGs) plus 12 ARGs that would often steam in the company of CVBGs. Under this arrangement, the Navy had 12 primary independently deployable, strike-capable formations—the 12 CVBGs. Under the new initiative, the CVBGs have been renamed carrier strike groups (CSGs), and some of the surface combatants previously assigned to CVBGs will now be assigned to ESGs. Under this arrangement, the Navy is to have 24 primary, independently-deployable, strikecapable formations—12 CSGs and 12 ESGs.

The number of independently deployable, strike-capable formations is to be further increased through the formation of surface strike groups (SSGs), which are formations of 3 surface combatants. (Such formations were previously referred to as surface action groups, or SAGs.)

The purpose in increasing the number of independently deployable, strike-capable formations is to increase the Navy's modularity and consequently its flexibility for responding to contingencies of different kinds in various locations. The logic behind the initiative is that some contingencies might not require the full striking power of a carrier air wing, but might nevertheless require the presence of a Navy formation with some amount of strike capability.

Much of the CSG's strike potential is resident in the large air wing embarked on the carrier. This air wing can attack hundreds of targets per day with precision strike weapons, including all-weather, GPS-guided weapons such as the JDAM.

The ESG, in contrast, lacks a large carrier air wing, so its long-range strike potential resides more heavily in the weapons carried by its surface combatants and attack submarine. For this reason, the viability of ESGs as strike-capable formations may be particularly influenced by whether they are armed with not only Tomahawks, but also a low-cost supplement to the Tomahawk (such as the Affordable Weapon) for attacking lower-value targets, and a conventional, long-range, high-speed strike missile for attacking time-sensitive targets, hardened targets, or deeply buried targets.

Mr. BARTLETT. How do the Affordable Weapon and a high-speed strike missile relate to the Navy's DD(X) destroyer program?

Mr. O'ROURKE. A key mission for the proposed DD(X) destroyer is naval surface fire support (NSFS). This mission contributes substantially to the size and cost of the DD(X), particularly in terms of the ship being equipped with two large (155mm) naval guns.

The fleet's requirement for additional NSFS capability has been reviewed and re-evaluated periodically in recent years. But the advent of relatively inexpensive GPS-guided bombs, the new concept of air-delivered loitering munitions, and evolving notions of land warfare may lead to a renewed debate about the priority of NSFS compared to other investments, or about the amount of NSFS capability that will be needed in the future. If so, the justification for the DD(X), or for building all 24 of the DD(X)s currently planned, may become subject to debate.

In addition to carrying two guns, however, the DD(X) will also be equipped with 80 vertical launch system (VLS) tubes for launching missiles. If the value of the ship's 2 guns comes into question, then the justification for the DD(X) program might turn more heavily on the ship's other capabilities. This could lead to a stronger focus on the question of whether the DD(X)s, if built, would be armed with not only Tomahawks, but also a low-cost supplement to the Tomahawk (such as the Affordable Weapon) for attacking lower-value targets, and a conventional, long-range, high-speed strike missile for attacking time-sensitive targets, hardened targets, or deeply buried targets.

Mr. BARTLETT. How would a high-speed strike missile relate to the Navy's Trident SSGN program?

Mr. O'ROURKE. One of the principal advantages that Navy officials cite about the Trident SSGN submarine is the large volume of payload space resident in its 24 large-diameter missile tubes, which can accommodate, among other things, up to 154 Tomahawks (7 Tomahawks for each of 22 tubes, with the remaining 2 tubes used for storing equipment). The operational cost-effectiveness of the SSGNs will depend in part on getting maximum use out of their payload space. Acquiring a conventional, long-range, high-speed strike missile for attacking time-sensitive targets,

hardened targets, or deeply buried targets, may be viewed as consistent with the goal of making maximum use of the SSGNs' large payload space.

Mr. BARTLETT. How big a problem is limited forward basing for long-range strike capabilities?

Mr. BOLKCOM. We have already witnessed a significant reduction in forward basing. Since the end of Cold War, the United States' has reduced the total number of forward bases by approximately two thirds. Major overseas air bases have declined by almost 70 percent. And, it appears that this reduction may have hampered recent operations. We have found that in both in Iraq and Afghanistan, operational planners were forced to modify our strategies and concepts of operations, and to tailor force structure to account for a lack of forward basing. Limited and uncertain access to forward bases in these conflicts complicated fighter, bomber, and refueling operations.

Limited basing can have a ripple effect throughout the entire force. Aircraft with the shortest ranges typically must operate from the bases closest to conflict, which pushes longer-ranged aircraft farther away. While these longer range aircraft can still operate from more distant bases, it can reduce their effectiveness and can complicate coordinating air assets. In Operation Desert Storm, for example, the United States operated 350 tankers at 5 airbases. In Operation Iraqi Freedom, 200 tankers operated from only 15 airbases, due to less access to in-theater bases. It appears that this basing limitation complicated tanker operations markedly.

However, others observers disagree about the severity of limited base access, saying that concerns about future deployability and access to forward airbases have been exaggerated. The wars in Afghanistan and Iraq prove a contrary point, these observers say, that the U.S. military is very adaptable. Rather than invest heavily in rapid deployability or long range systems, the military should continue to invest in a mix of long and short range capabilities to ensure future flexibility. In Iraq, coalition air forces adapted well to mitigate basing challenges.

For instance, the Air Force teamed up with the Army to execute the largest air drop in recent memory. Special operations forces seized and secured airbases within Iraqi territory that were quickly exploited by coalition air forces to conduct combat air operations against Saddam's army. Also, these observers say, because the United States tends to fight wars abroad, we have the luxury of preparing and executing the war on our time line. Much of the investment in long range or rapid deployment is lost, some say, because the war doesn't start until we are ready. Those concerned about access to forward bases had argued that the United States was lucky in the first Gulf War, because Saddam erred, and allowed us six months to build up a force in the region. Some said that Saddam would never again give us that much time to build up. The recent war in Iraq disproved that theory.

Mr. BARTLETT. You seem to emphasize the threat from enemy SAMs more than you do enemy fighter aircraft. Don't we have to worry about the proliferation of advanced Russian fighters?

Mr. BOLKCOM. The threat to the United States from advanced fighter aircraft in the hands of most countries is currently minimal. The United States has an overwhelming advantage in military airpower, and most analysts believe that potential adversaries will attempt to counter U.S. airpower through asymmetric responses, rather than trying to match us strength for strength.

Those who argue that advanced Russian fighters are a threat to the United States tend to focus on one of the aircraft's attributes that they say is superior to the F-15s capabilities; say maneuverability. But this comparison maybe misleading. It can be argued that the Russians focused on designing aircraft with good maneuverability, because they knew that they couldn't compete with the F-15's good radar and beyond visual range air-to-air missiles. Being more maneuverable doesn't necessarily make an aircraft a better fighter. Also, combat aircraft don't fight one-on-one, but as part of a larger system.

If tomorrow's adversaries want to compete with the United States in aerial combat, they will have to invest in hundreds, of good fighter aircraft, because quantity still counts in warfare. Adversaries will need to purchase thousands of good air-to-air missiles, and invest in high bandwidth, jam resistant data links, for its entire force. Adversaries will need to invest in the airborne warning and control aircraft, stand off jamming aircraft, surveillance and intelligence aircraft, and aerial refueling aircraft that are essential to modern combat operations. If adversaries want to compete with the United States, they will need to invest in people. Pilots will need 200 or more hours of in-cockpit training annually, supplemented-by 70 or more hours in advanced simulators. Good maintenance people will also need to be educated and trained. Potential adversaries will need to create and nurture graduate-level military academic institutions that can develop advanced doctrine and operational concepts that are required to compete in the modern combat arena. If tomorrow

row's adversaries want to compete with the United States, they will need to invest in facilities. They will need good, instrumented training ranges, that require hundreds of square miles of airspace in which personnel can experiment with doctrine and concepts of operation.

The proliferation of advanced Russian fighters is a concern for the United States but only in conjunction with the kinds of capabilities outlined above. Currently it appears that very few countries are capable of making these kinds of investments. Most industrialized countries of western Europe, Russia, China, Israel, and potentially India are the countries that most analysts believe have made, or could make and sustain such investments.

Mr. BARTLETT. Why would the Air Force want to escort stealthy F-22s with stand off jamming aircraft? Isn't stealth and stand off jamming incompatible?

Mr. BOLKCOM. At one time, some stealth proponents argued that stand off jamming and electronic countermeasures were unnecessary for stealth aircraft at best, and incompatible at worst. When debating B-2 procurement, advocates argued that stealth would save money because stealthy aircraft wouldn't require escorts like stand-off jammers to penetrate air defenses, and tanker demands would also be reduced. This prediction appears to have not proven true. In actuality, operational planners have found it prudent to protect stealthy aircraft like the F-117 and the B-2 with stand off jamming aircraft, in this case the EA-6B. Marine Corps officials have testified that EA-6Bs escorted every low-observable aircraft mission conducted during Operation Allied Force. It appears likely that tomorrow's stealthy aircraft will also ensure their survivability with stand off jamming.

Mr. BARTLETT. Do you think that the long-range strike efforts are sufficiently joint?

Mr. BOLKCOM. On one level, we can't expect the Air Force and Department of the Navy to become too joint in this area, because they operate fundamentally different platforms, such as carrier-based aircraft and long-range bombers. The Navy isn't unlikely to field long-range bombers, and Air Force isn't likely to field carrier-based strike aircraft. In the long range strike mission, an increased drive toward jointness may not generate as big a payoff as developing a menu of diverse capabilities that satisfy the individual service's requirements and complicates enemy's planning and defenses.

However, there do appear to be opportunities to increase joint investment options that could contribute to long range strike in uncertain base access scenarios. The JSF, is of course, a joint program. If increased jointness is a priority, widening the scope of this program may have merit. Standoff jamming today is clearly not joint, and pursuing a jamming variant of the JSF for all of the services could be considered. The Navy likes the EA-18G because of its commonality with the F/A-18E/F. Using the commonality yardstick, an EA-35 would be superior to the Growler, since it will be flown by all of the air forces. There also appears to be opportunities to increase jointness in long-range weapons procurement. The Air Force has canceled its participation in JSOW and Navy support of JASSM is in question.

Mr. BARTLETT. Do you think that the Navy's TAI Plan makes sense financially? Is it a sound investment?

Mr. BOLKCOM. The Department of the Navy's TAI plan presents great uncertainty, both financial and operational. The DoN projects that reducing fighter aircraft by 30% will save \$35 billion in procurement funding through FY2021. However, to increase the effectiveness of a smaller force, it will have to spend at least \$16 billion to increase USN readiness through FY2010, and more beyond that date. The TAI is projected to save \$1 billion in procurement over the FYDP, (04-09), but will cost \$3.7 billion in readiness spending over the same period. So, TAI will cost more in the short term. Also, TAI could increase the per unit cost of the JSF. R&D costs would be spread out over a 14% smaller purchase, and it could scare away foreign partners, reducing purchases even more.

The DoN's smaller force is hoped to be more effective than larger force due to higher readiness of USN squadrons and increased spending on modernization and ancillary equipment, like targeting pods. Also, cross assigning more units is hoped to increase effectiveness. However, there is no guarantee that increased spending on modernization will occur in the future. The Navy admits that the TAI will increase the *likelihood* of additional modernization spending. Also, the improvements in combat capability due to cross assignment are unproven, and it is unclear whether they will make up for the combat power lost in a 500-aircraft reduction. It is noteworthy that the number of JSF's to be cut from force structure—409—is about the same number of Navy aircraft that were deployed and used in Operation Iraqi Freedom. In essence, the Navy is deciding not to procure one major regional contingency worth of combat aircraft. It is also unclear what the operations tempo impact

will be on 10-aircraft JSF squadrons that are expected to do the same job as today's 16-aircraft AV-8B squadrons.

Another uncertainty has to do with the total purchase and mix of CV and STOVL variants. The final decision of how many of each variant, and whether the Marine Corps will fly some number of CV variants has not yet been made, and this is a potentially important decision in terms of long range strike, and air dominance. The decision boils down to range vs operational flexibility and cost. The CV JSF is hoped to have a 770 nm combat radius, 9,000lbs bring back capability. The STOVL JSF is hoped to have 500 rim combat radius, with 5,200lbs bring back capability. The STOVL JSF operating from a CVN may provide an increase in sortie-generation capability. Also, the estimated \$2 million cost differential between the two models also has important financial implications.

QUESTIONS SUBMITTED BY MRS. JO ANN DAVIS

Mrs. DAVIS. In reference to a question which stated: "Admiral Fitzgerald, I have seen your statement and am extremely pleased with your emphasis, and I quote, that CVN-21 will be the centerpiece of our Nation's long-range striking power."

Knowing that Article 1, Section 8 of the Constitution clearly obligates us to provide and maintain a Navy, I am trying to enable Congress to better fulfill that duty with some nonbinding legislation on naval force structure that I introduced last year. I am pleased that the Chairman and Ranking Members of both this subcommittee and the full committee are onboard with me as cosponsors. However, in my talks with my colleagues who have not committed to legislation addressing naval force structure, I sometimes hear them express their concern about the cost of carriers. Admiral, your statement is full of reasons why that cost is absolutely justified.

I now ask you to summarize for me why CVN-21 is so important.

Admiral FITZGERALD. CVN 21 is the Navy's new large deck, nuclearpowered aircraft carrier replacing the venerable Nimitz class. CVN 21 will enhance the carrier fleet's capabilities with improved design features and technology enhancements that optimize flight operations, reduce crew size, and save valuable operations and support costs. CVN-21 accelerates incorporation of advanced technologies that include: a new electrical generation and distribution system, electro-magnetic aircraft launching system, an improved flight deck with pit stop servicing for aircraft and streamlined weapons and material movement. Built-in changes to communications and electronics facilitate a Net ready interoperability capability allowing CVN 21 to "plug in to" the future global information grid and act as the command hub for the Carrier Strike Group or Expeditionary Strike Force.

CVN 21 is a central element of SEAPOW 21 with the extended reach and Sea Strike capability provided by the embarked Carrier Air Wing. It will have a decisive war-fighting impact in future contingencies with an increased aircraft sortie generation rate of at least 160 sorties per day over 30 days and a surge rate of 270 per day when required. CVN-21 will provide a persistent Sea Shield over the Combatant Commander's battlespace with around the clock surveillance and command control aircraft launched from the protective sanctuary of the open ocean or the littorals. Moreover, support of CVN-21 in the near term will also help to stabilize our shipbuilding defense industrial base.

QUESTIONS SUBMITTED BY MR. HOSTETTLER

Mr. HOSTETTLER. Why are you walking away from the Joint Stand-Off Weapon (JSOW), which has twice the range, is low observable, has a unitary warhead, fits inside a JSF, and has a munition that addresses the unexploded ordnance issue with cluster weapons? Why is the WMMD-ER a better choice for the Air Force?

General MOSELEY. The Air Force based its decision to end Joint Standoff Weapon. A procurement on capability requirements and analyses of a wide range of platforms and weapons that can provide the required capabilities. We balanced capabilities, cost, and risk. We analyzed numerous platforms and weapon options to ensure the required capabilities (direct attack, stand-off outside point, area and theater defenses) are being provided and procured, and Wind Corrected Munitions Dispenser-Extended Range (WCMD-ER) is just one of the many technical solutions being applied by the USAF to provide the required capabilities. Strategic Planning Guidance, Integration Capability Review and Risk Assessment process, and Air Force Studies and Analyses Agency studies support the decision. The analyses showed that capability requirements could be met with a mix of existing and planned platforms and weapons. The Air Force has several operationally and costeffective options, including current stand-off weapons such as Air-to-Ground 130 (AGM-130),

Conventional Air Launched Cruise Missile (CALCM), Joint Air-to-Surface Stand-off Missile (JASSM), limited Joint Standoff Weapon-A buy, and future stand-off weapons such as the JASSM-Extended Range (ER), WCMD-ER, Small Diameter Bomb, as well as direct attack weapons that can be delivered by stealthy platforms (B-2, F-117, F/A-22, F-35).

Joint Standoff Weapon-A is integrated on four Air Force platforms, but with numerous restrictions, issues, and "workarounds." After 12 years in the Joint Standoff Weapon program, the Air Force has dropped zero in combat. Based on program documentation, combat, and developmental and operational test data, Joint Standoff Weapon's operational utility for the Air Force, and successful integration on Air Force platforms, has not been proven.

Mr. HOSTETTLER. In reference to a question which stated: "Regarding the mix of joint weaponry, the Air Force doesn't think the JSOW is the answer to their needs. Why is Navy staying with it?"

Admiral FITZGERALD. We are confident that JSOW is the only choice for the Navy to answer the target set against which it was designed. When compared to competing weapons, JSOW provides superior standoff, superior survivability through low-observable technology, is compatible with the Joint Strike Fighter, and is the weapon-of-choice in the most critical opening phase of an integrated air defense system roll back campaign. Additionally, we have a path forward with our JSOW plan to solve the unexploded ordnance problem. We are looking forward to the next variant, the JSOW-C with the Broach warhead, which will provide survivable standoff and precise hard-target penetration, finally answering a key and long-standing capability shortfall in our target set.

FISCAL YEAR 2005 NATIONAL DEFENSE AUTHORIZATION ACT—NAVY RESEARCH AND DEVELOPMENT, TRANSFORMATION AND FUTURE NAVY CAPABILITIES

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROJECTION FORCES SUBCOMMITTEE,
Washington, DC, Thursday, March 11, 2004.

The subcommittee met, pursuant to call, at 10:15 a.m., in room 2212, Rayburn House Office Building, Hon. Roscoe Bartlett (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. ROSCOE BARTLETT, A REPRESENTATIVE FROM MARYLAND, CHAIRMAN, PROJECTION FORCES SUBCOMMITTEE

Mr. BARTLETT. The subcommittee will come to order. This morning, the Projection Forces Subcommittee meets to receive testimony from Department of the Navy witnesses on the President's fiscal year 2005 budget request for the Navy's projection forces.

Our witnesses include the Honorable John J. Young, Jr., Assistant Secretary of the Navy for Research, Development and Acquisition, Vice Admiral John B. Nathman, Deputy Chief of Naval Operations for Warfare Requirements and Programs; Vice Admiral James C. Dawson, Deputy Chief of Naval Operations for Resources, Requirements and Assessments; Lieutenant General Edward Hanlon, Jr., Deputy Commandant for Combat Development, and Commanding General of the Marine Corps Combat Development Command; and Rear Admiral Jay M. Cohen, Chief of Naval Research.

Gentlemen, welcome to the subcommittee. The subcommittee just completed a classified briefing on the threat to our naval forces operating throughout the world in support of the global war on terrorism and in defense of U.S. national interests that establishes a context for our unclassified hearing today.

In this hearing, we will examine the Department of the Navy's research and development programs and support for naval transformation and future naval capabilities. We will hear from our witnesses on Navy and Marine Corps transformation and about those critical research and development programs that support today's Navy and Marine Corps that will provide new capabilities for tomorrow's sea services. We will hear about the role of the Navy science and technology program and how it provides advanced technologies for insertion in naval systems and for future capabilities for the Navy and Marine Corps.

We will discuss the Navy's program for development of a new family of surface combatants, including the DD(X), advanced multi-

mission destroyer, and the LCS, the Littoral Combat Ship, and for development of other critical and transformational capabilities. We will hear from our witnesses about the Navy's critical core competencies that are necessary for successful operations in the littoral regions of the world, anti-submarine warfare, mine counter-measures and ship self-defense.

Today, units of the United States Marine Corps are preparing to deploy and replace some Army units in Iraq. I hope that our witnesses will, at an unclassified level, be able to address some of the measures being taken to prepare our Marines and supporting naval forces for operations in Iraq, the littoral, the Arabian Gulf and adjacent waters and any place else in the world that our naval forces may be deployed.

Our purpose today is to ensure that for fiscal year 2005 and beyond the nation continues to provide the Navy and Marine Corps the resources they need to achieve the right balance of force structure capabilities to meet today's challenges and the new challenges that surely lay ahead. We owe it to our sailors and Marines who defend freedom around the world to ensure that they have the ships, planes, combat vehicles, weapons, equipment, training systems and technologies that will ensure success on any battlefield on which they may fight, at sea, in the air, or on the land.

Secretary Young and Admiral Nathman, Admiral Dawson, Lieutenant General Hanlon, and Rear Admiral Cohen, I am very pleased to welcome you to today's hearing. I look forward to your testimony and to the discussion which will follow.

Before we begin, let me call on my friend, the gentleman from Mississippi, the Ranking Member of the subcommittee, Gene Taylor, for any remarks he would care to make.

[The prepared statement of Mr. Bartlett can be found in the Appendix on page 181.]

STATEMENT OF HON. GENE TAYLOR, A REPRESENTATIVE FROM MISSISSIPPI, RANKING MEMBER, PROJECTION FORCES SUBCOMMITTEE

Mr. TAYLOR. Thank you, Mr. Chairman.

I want to thank our distinguished panel for being with us today. While I have you here, I would hope that someone would touch on the subject of the transition from the DDG-51s to the DD(X). Those of us who get a paycheck every month sometimes forget that those guys who work in the yard are paid by the hour, and if there happens to be a slip in that program, it not only has national defense implications, but it is also pretty tough on those guys who are cutting steel and welding things back together.

I would hope that someone is monitoring it, so that we have a seamless transition from one program to the other. I do not think we need the peaks and valleys that we went through in the early 1990s. I hope that we can have a steady state in our yards and I hope you will address that.

Second, I remain concerned that the fleet is too small. I do not see how we solve that problem by retiring the first of the Aegis cruisers, the first of which will be retired after deployment this summer. With a fleet that is now less than close to 300 ships, I just

do not see how it makes sense to retire a ship that is barely 20 years old, but I would welcome your thoughts on that.

Again, I want to thank all of you for what you do for our nation, and thank you for being here today.

Mr. BARTLETT. Thank you very much.

Secretary, I understand that a joint statement has been submitted by the panel. I invite you to proceed as you wish in presenting the panel's testimony. The joint statement will, without objection, be entered into the hearing record.

Secretary Young.

STATEMENT OF HON. JOHN J. YOUNG, JR., ASSISTANT SECRETARY OF THE NAVY (RESEARCH, DEVELOPMENT AND ACQUISITION); VICE ADM. JOHN B. NATHMAN, UNITED STATES NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (N-7) (WARFARE REQUIREMENTS AND PROGRAMS) DEPARTMENT OF THE NAVY; VICE ADM. JAMES C. DAWSON, JR., UNITED STATES NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (N-8) (RESOURCES, REQUIREMENTS, AND ASSESSMENTS) DEPARTMENT OF THE NAVY; LT. GEN. EDWARD HANLON, JR., UNITED STATES MARINE CORPS, COMMANDING GENERAL, MARINE CORPS COMBAT DEVELOPMENT COMMAND; REAR ADM. JAY M. COHEN, UNITED STATES NAVY, CHIEF OF NAVAL RESEARCH, DIRECTOR, TEST AND EVALUATION AND TECHNOLOGY REQUIREMENTS, DEPARTMENT OF THE NAVY

Secretary YOUNG. Mr. Chairman, Congressman Taylor, Members of the committee, it is a privilege to appear before the Projection Forces Subcommittee to discuss Navy and Marine Corps transformation, research and development programs, and the fiscal year 2005 budget request. Thank you for your personal and the committee's great support for Navy and Marine Corps programs.

The Navy and Marine Corps teams's outstanding performance in the global war on terrorism and Operations Enduring Freedom and Iraqi Freedom last year underscored the high return on your investment in our combat readiness, our people and our unique maritime war fighting capabilities. The core to emerging naval concepts are the new systems under development, such as DD(X), LCS, the CVN 21, and the LHA(R) amphibious ship. Forcible entry through the littorals into denied access areas relies on all these systems operating together to provide sustained striking capability, all without permission slips, as the Chief of Naval Operations (CNO) likes to say.

As you know, the fiscal year 2005 request includes funds for 9 ships and 108 aircraft, reflecting the continuous and successful efforts by the Department of the Navy to increase the numbers of ships and aircraft we are purchasing in order to modernize our force. Within these efforts, it is important to improve how we buy weapons systems. I would like to emphasize a few points in this area.

Under current procurement programs, the Virginia Class submarine program recently signed a multi-year. As you know, through the support of Congress, we were authorized to negotiate that multi-year with incentives that reward and measure performance, a realistic cost target, and terms that strongly incentivize on

or below target cost performance. The Virginia multi-year is essential to stabilizing this program at the low procurement rates.

CVN 69, the refueling of the *USS Eisenhower*, in a remarkable action, the Department reached agreement with our industry partners to renegotiate the CVN 69 carrier refueling overhaul. This contract was also converted from some fixed profit to incentive fee, linking the fee to discrete milestones and adjusted the share lines to again incentivize delivery on target. CVN 70, a refueling that is planned, was delayed 1 year to take advantage of the fuel remaining in the reactor. This decision led to a comprehensive evaluation of the carrier program, resulting in decisions to enhance maintenance actions on the *JFK*, dock the *George Washington*, and slip CVN 70.

These efforts all helped stabilize the workload at Newport News and assured the fleet that we would have the carrier program ready for the surge operations. All these decisions reflected an unprecedented collaboration between the acquisition team, the fleet, the requirements community and industry, efforts which sought to balance capability, cost, industry workload and other factors.

As we look to future procurement, the budget this year includes a request to R&D fund the lead ships in the DD(X) and LCS class. This request mirrors the approach used in every other weapons development program. Indeed, tactical aircraft programs are developed by using R&D funds to establish the production process which is critical and build multiple pre-production aircraft. These steps are equally important in shipbuilding to build a production process that can be efficient for the ship class, just as it is for aircraft.

LHA(R) is benefiting from the lessons we have learned in Iraq and Afghanistan, which suggests we should maximize the air capability of this ship, while leveraging the design changes already invested in for LHD 8. These lessons are consistent with efforts also over the past year, analytical efforts on joint forcible entry operations, and will ensure this ship is a lead member of the future joint sea basing efforts. The resulting designs provide transformational capability and leverages our investment in the Joint Strike Fighter and the MV-22.

In regards to current operations, as noted, the Marines are in the process for a deployment to Iraq. In support of the 1 MEF's (Marine Expeditionary Force's) return to Iraq, and in support of the Marines in Afghanistan, the Secretary of the Navy directed the establishment of a formalized process and action team, Operation Response, to rapidly respond to technological and material requirements generated from our deployed Marines.

A senior Navy-Marine Corps team co-chaired by myself and Lieutenant General Hanlon, will review and coordinate technical and engineering expertise throughout the Department of the Navy and throughout the Department of Defense (DOD) and industry, to expedite the best solutions available to counter rapidly evolving threats.

I am grateful for the chance to offer these few examples of the many activities that are going on in the Department of the Navy, and I welcome the chance to answer the committee's questions. Thank you for the chance to appear today.

Admiral Nathman I believe has a short statement.

[The joint prepared statement of Secretary Young, Admiral Nathman, Admiral Dawson, General Hanlon, and Admiral Cohen can be found in the Appendix on page 183.]

Admiral NATHMAN. A short statement, sir, if you do not mind.

Mr. BARTLETT. Yes, proceed.

Admiral NATHMAN. Chairman, thank you very much. Congressman Taylor, distinguished Members of the panel, I am honored to be here this morning. I am pleased with the opportunity to thank you for your past support and to talk to you about our naval capabilities, particularly in regards to transformation.

Secretary Young has already highlighted some of the important contributions of the Navy and Marine Corps team made in Operation Iraqi Freedom and the continuing global war on terrorism. Let me focus instead on the conceptual level of naval transformational plans.

Today's naval team is transforming to exploit the emerging joint war fighting trends of increased speed, precision, shared battle space awareness, persistence and employability. This transformation greatly expands the sovereign options available worldwide to the president by exploiting one of the key asymmetric advantages that we control, and that is control of the sea. To this end, the sea basing concept and capability is the centerpiece of our naval transformation, an operating concept that will equip the nation with the ability to assure joint access and project joint combatant power on the sea.

It forms the cornerstone to our vision of future joint war fighting, which leverages the operational maneuver of our sovereign maritime battle space. It reduces the joint force operational dependence upon fixed and therefore vulnerable land bases. It offers the Joint Force Commander increased freedom of action to deploy, close, employ and sustain forces.

I would like to conclude with a short comment on our analytic work. Our work on defining the direction of our transformation has been supported by a broad-scale and rigorous naval analytic effort and process. Our analysis of campaign scenarios, concept of ops, and tactical situations have begun to pay dividends and provides us good insights on the war fighting return on investments that we are asking you to make in the programs that deliver the concept that we believe we will be discussing today.

Thank you, Mr. Chairman.

Mr. BARTLETT. Thank you very much.

As is my practice, I will defer the questions of the chair until after all of the members of the subcommittee have had a chance to ask their questions. I would like, however, to begin today with just one question before I turn to my Ranking Member.

Admiral Nathman, section 216 of the 2004 National Defense Authorization Act directed the Secretary of Defense to provide for the performance of two independent studies that would recommend future fleet architectures for the Navy. One study is to be performed by the Office of Force Transformation and the other by a federally funded research and development, FFRDC, such as the Institute for Defense Analysis. The studies are to be reported to the congressional defense committees not later than January 15, 2005.

The Office of Force Transformation has briefed me on the status of an approach to their study. I understand that the Secretary of Defense has delegated the other study that is to be conducted to the Navy for selection of the FFRDC. What is the status of the Navy study and when can I receive a briefing on the approach that is to be taken?

Admiral NATHMAN. Yes, sir. As you understand, sir, our timelines to deliver that to the Secretary, I would have to come back to you and commit on the time. We will have to work that with your staff, sir, when we can come back and back-brief you. Where we are right now is we have actually three actions, the overarching studies that will be done through the Office of Force Transformation. Admiral Cebrowski leads that. We are thankful for his leadership on that. We have engaged already with that office. We in fact are providing support, both on our analytic insights and our work that we are doing right now to make sure that they understand where we are in our force structure needs and our commitments and our capabilities. So there is a strong integrated level of effort with Admiral Cebrowski's work.

We also have committed to a significant force transformation and force capability study around force structure. We kicked off that work as an independent effort inside of our analytic process. So we are now looking at what is the right support that we need to finalize that particular study and deliver to the request from the Office of the Secretary of Defense. So we are working that right now, sir. We think we have a clear view about how to outline our needs to our study partner on this one, and that we are integrated with the other effort in the office of force transformation.

Mr. BARTLETT. It was our anticipation that these two studies would be quite independent. I understand your need to supply basic information to the other team. Is it your understanding that these will be two totally independent studies, that there will not be dialogue between the two teams during the development?

Admiral NATHMAN. No, sir. I do not see any dialogue. We will provide supporting data in the case of office force transformation. We will also provide, probably we will take the lead in providing the construct for the other study. So I do not see a conflict in terms of the fact that the two studies will be independent. We will just provide supporting data as Admiral Cebrowski sees the need for it. So it will be the manned signal from Admiral Cebrowski that will we will respond to to ensure the interdependence of the two studies.

Mr. BARTLETT. When might we expect a briefing on the approach that is to be taken by the second team, the FFRDC team?

Admiral NATHMAN. Sir, I think we can deliver that in the near term. I will work with your staff as far as how fast we can deliver the concept and construct of that particular study for you. Is that okay, sir?

Mr. BARTLETT. Thank you very much.

Admiral NATHMAN. Yes, sir.

Mr. BARTLETT. Mr. Taylor.

Mr. TAYLOR. Thank you, Mr. Chairman.

I would ask specifically to Secretary Young if you have given much thought or a lot of thought to the transition from the DDG

51 to the DD(X). I am very much concerned. I think the folks who are at the yard are starting to express some concerns.

Second, I would like to hear your thoughts on the Littoral Combat Ship (LCS), how far along we are on that program and whether or not the technology is causing a delay in the delivery of the first ships as you envision them, and when do you expect the first of the Littoral Combat Ships to be commissioned; when do you expect the first of the DD(X)'s to be commissioned?

And of course finally, as ships are being retired, I understand the first flock of the cruisers are going to be retired within the next year or two, how many ships are you bringing on line to take their place? I realize that the buzz word is "capability," but the world is still a fairly large place and you do need a fairly large number of ships to have any presence in all those places where we are expected to have a place. I would like to hear your thoughts on that.

Secretary YOUNG. Let me see if I can walk through it, Congressman. I have personally spent a great deal of time on the transition from DDG to DD(X). As you rightly highlighted, that is an important, a critical issue. Back in the September time frame, I took several detailed briefings. We can certainly make some of that material available to you. Some of that material shows up in the recently completed shipbuilding industrial base study requested by Congress.

The short conclusion out of that is I believe at the General Dynamics facility we have a reasonably stable transition from DDG to DD(X) as long as we hold the DD(X) schedule. That is critical.

Mr. TAYLOR. Do you see any evidence that the schedule is not being held?

Secretary YOUNG. Not at this time, sir. I think with regards to Northrop Grumman facilities, the transition from DDG to DD(X) is potentially manageable, but that yard has an issue, a dip in workload that I think they were probably aware of, that the DDG-DD(X) program will not solve. It is really related to the pace of amphibious ship construction. We can make those workload curves available to you.

So I still have concerns about the transition of that yard which builds both amphibious ships and destroyers. I think that is the conclusion that came out of the analysis work that continues, but it was aggressively undertaken in the September time frame to evaluate that transition.

As far as key discourse goes, though, I believe we can make that transition very well from DDG to DD(X) in Northrop Grumman's facilities. I am happy to come back and talk to that in more detail.

Mr. BARTLETT. If the gentleman would yield for just a moment. Mr. Young, we have a draft here of the GAO defense acquisitions assessment of major weapons programs. Their comment relative to the DD(X) is that the DD(X) is scheduled to enter system development with none of its 12 critical technologies fully mature. Do you concur with that? If so, what is that going to do to your schedule?

Secretary YOUNG. I guess I would not concur. Having not seen all the details of that, I would like to review it. But as you know, we have engineering development models on what we believe are the critical path items, the electric power motor, the radar, the total ship computing environment, and in any of those areas, I can

tell you we have made good progress. The first software release of the total ship computing environment is in test and integration right now in the Dahlgren facilities. Motor construction is underway. Guns evaluations are underway. Advanced gun system is another of the Engineering Development & Manufacturing (EDM) items.

So what we have identified as a critical path item to be able to develop and build this ship, we have concentrated efforts that are keeping schedule and producing results. So we feel like we have a very good chance of holding to schedule on this.

Mr. BARTLETT. When you have had a chance to review the GAO report, could you contact Mr. Taylor's office and our office and arrange to meet with us. I think that we both would like to know what this assessment has on your projected schedule.

Secretary YOUNG. Yes, sir. I would be very happy to, sir.

Mr. BARTLETT. The comments relative to the Littoral Combat Ship are that 10 of 22 of the critical technologies are fully mature. If you could also review their observations on the LCS and have that same discussion with our two offices.

Secretary YOUNG. Yes, sir.

Mr. BARTLETT. Thank you very much, Mr. Taylor.

Mr. TAYLOR. Certainly.

Secretary YOUNG. With regard to the Littoral Combat Ship, we feel like we have had great success in working with industry. We have the three proposals in right now and our discussion with industry to make sure we understand the proposal in each area. It is important to understand that in LCS we are seeking to buy a sea frame, and I will look very carefully at the GAO report. It may be with regards to the mission modules. In both cases, though, I would highlight, I will take them separately.

The sea frame, as you know, we have vessels now that are this class of ship. We know exactly what they cost and the demand for the operators to use those vessels. They have been used to transport Marines in the Pacific. They have been used to some degree in the Persian Gulf. The demand and the utility of those ships is very high, and the operators are calling for them. There is clear industry-demonstrated ability to build these ships for cost, build them with the requisite speed of 40 to 50 knots, and all those factors.

So I would say we have good confidence. We are pleased with the proposal we got from industry and we are in the process of reviewing those and making a decision as to whether we should select one or two candidates. I know you have heard the CNO's comments that he needs that ship tomorrow, if not today. We are working very hard to deliver that and feel that ship is well within reach. To talk to the other part that makes that ship a fighting ship, the mission modules, in many cases the fight zero mission modules are systems we had in development for applications from AQS-20 to detect mines, the laser mine detection systems, across the board. Many of those systems we find will be much more effective, more flexibly employed from a Littoral Combat Ship. So I believe those risk factors we feel we have in hand, so I am anxious to review that.

In the area of the building rates, especially with the three DDGs in 2004 and three DDGs in 2005, are tailored to begin to bottom the reduction in the fleet's numbers and begin to grow those numbers again. LCS and DD(X) are important pieces of stabilizing and beginning to grow those numbers. I probably should make sure Admiral Nathman has a chance to comment on fleet numbers, but I did not want to miss your question about cruisers.

As you know, we have a cruiser modernization program that will seek to keep the cruisers we feel we need for the appropriate force structure in process, and are beginning to execute through the support of Congress last year for the initial cruiser conversions. Maybe that is a good point. Your last wrap-up question seemed to be about numbers, and I can come back to any of those, but I will offer Admiral Nathman a chance to comment on the fleet numbers.

Admiral NATHMAN. Sir, I think our analogy here would be that we made a decision several years ago in our tactical air programs that we would walk away from high-cost tactical air programs as rapidly as we could to bring about the ability to make the investment in our new programs. We made a very good decision about our F-14, a very capable airplane, but a decision to early retire the aircraft and move on to Super Hornet.

It is the same analogy in our shipbuilding. We have a force in being with ships that are reaching obsolescence age. You can invest there, invest in the old, or you can make a decision to give yourself more room, more liquidity in your investment structure by buying new. So we made some hard decisions about near-term force structure to move on to the future.

Part of that future is to make the investment in DD(X); to make the investment in our follow-on shipbuilding plans; and in terms of capability, to look at ships that cost less and are less to support, like Littoral Combat Ships, that goes after a very dear gap in littoral in terms of war fighting, for buying warfare for Anti Submarine Warfare (ASW) and for surface dominance.

To make that investment, that is our opportunity we see to change the size of our force as a way of also changing the capability that we need in our force. So it is a balance of affordability, while looking to try and buy the best capability we can and having the liquidity in our investment accounts to do that.

Thank you.

Mr. TAYLOR. Mr. Chairman, if I may. I happen to have been here in the early 1990s when a World War I-vintage mine almost sank a \$1 billion warship. I think the name of the ship was the *USS Princeton*. For a while there, Congress allocated a lot of resources to the mine hunting mission. We really have not heard much talk of the mine hunting mission in the past five years or so. I was curious what your thoughts are as a panelist as to what kind of a threat that continues to pose to the Navy? Or do you think we have allocated the proper resources to be where we need to be now and for the next five or ten years?

Admiral NATHMAN. Sir, I will try and answer that question. Vice Admiral Dawson may want to comment, or Secretary Young. But I would say that we have done a lot of intellectual capital work around our mine warfare gap. Part of this is our analysis has clearly made the mine clearance and the mine detection and cueing a

clear war-fighting gap for us. That is why I think you see a very strong investment and push by the CNO to move the Littoral Combat Ship, because one of its premier modules on that ship is the mine warfare module.

That is a way of getting a distributed force, because one of the opportunities we have with the Littoral Combat Ship is in the numbers because you can have a distributed capability in terms of cueing and detection and localization and killing in mine warfare. So this is one of the compelling war-fighting trends that we have, and that is speed. One of the issues that we have as to speed, is we are being driven on the effect side to what kind of speed can we bring to shape the joint battle space. That implies the Navy has to be there. It implies the Navy has to have maritime dominance and superiority in the littorals.

One of the ways of doing that in the mine warfare stuff is to make our mine warfare capabilities more organic to our expeditionary strike groups and our carrier striking groups, and we are going to do that primarily through the capabilities that we bring with LCS and with the tremendous investment and way ahead that we see on our MH-60 helicopters. Those modules will be part of the mine warfare modules on LCS.

So this I believe is a great amount of organized conceptual analytic work around this is the gap; how do you close it; how do you bring speed; and what is your investment strategy to change the way you are going to see the mine battle space; change the mine battle space; and provide the effect that you want.

I will give you an example of that. A very good example is this long, long-term mine reconnaissance system developed by the submarine community. The opportunity of that particular system is that we may know the mine battle space that we will be facing before we close the littoral with our expeditionary strike groups. So the concept of that, the war-fighting concept of the long-term mine reconnaissance system is something that we need to make sure we have the right level of investment and do we get the persistence in that module. In other words, can we take that capability and potentially change the persistence of that capability by going to something larger that maybe you embed in SSGN.

But what is so valuable about it is what we have learned in building to the long-term mine reconnaissance system. Then you can choose, this is where the mine problem is; if I have to go there, how do I rapidly clear it. I think you see a strong investment there in Rapid Airborne Mine Clearance System (RAMICS) on mine neutralization systems in current organic capabilities that we have right now.

And then how do we change the speed? We change it by the MH-60 and the Littoral Combat Ship investment.

Mr. TAYLOR. Thank you, Mr. Chairman.

Mr. BARTLETT. Thank you.

Mr. Saxton.

Mr. SAXTON. Thank you, Mr. Chairman.

Gentlemen, thank you for what you are doing for our country. These are tough times and you are all out there every day working for the American people. As their representatives, we want you to know that we appreciate it.

I was reminded not long ago what our defense structure looked like during the Cold War. As we deal with our daily tasks now, the world is so different than it was back in those days, particularly in the world of national security. I picked up a book not long ago that outlined the success that we had in Desert Storm and the weapons systems that we used. Now when I turn on the television every day and look at what we are doing in the war on terror, things are even different yet again.

So a very simple question, but one that is very difficult to answer, is this: What is the Navy's vision of what warfare will be like in the future? And what is the Navy doing today to prepare for that? I know that is a tough question.

Mr. SIMMONS. Thirty seconds or less. [Laughter.]

Admiral NATHMAN. One thing I could offer on this, sir, is we are briefing on the Senate side a lot of where our analytic work has taken us. I would offer that brief to you here. It is a substantial brief and we can give it to you in the Pentagon with some very compartmented briefings. Besides that, we can come over here and brief you, sir, but I will coordinate that. I think you would enjoy that. It will give you some insights.

Part of our work in our analytic work around war-fighting is that we have gaps in our current capability where potentially our enemies may go. We have current operational challenges that deal with either funding levels or different systems. Then you have a pacing-the-threat issue out there. One of the pacing-the-threat issues that we have is the potential challenge in missile defense.

The Navy has been working very aggressively with the joint staff and aggressively with the Office of the Secretary of Defense and the Missile Defense Agency in reestablishing Navy sea-based terminals and Navy missile defense requirement needs. The way you do that is you build a compelling case about the war-fighting gap that may exist, and I think you saw some of that today, sir, Mr. Chairman, in your intelligence briefing.

The other thing it identifies is the current gaps that you have, and you will carry these gaps until you go towards an investment strategy. Those are some of the needs in terms of ASW and mine warfare, some compelling needs in self-defense for particular ships.

So it reinforces our intuition about some of the challenges that we have, but now it is strongly analytic-based. But it also makes us look in the joint concept. It is not just the Navy answer or the Marine Corps answer to this war-fighting future. It is, what are we supposed to contribute in terms of the total joint war-fighting effect that this nation wants? Because it ought to be able to distribute its share of money that is dear to the nation over the Department of Defense, and not have every service replicate a particular capability. That probably ought to be distributed based on what key core competencies those services bring.

So part of this is we bring this campaign analysis inside of the joint capabilities development process, inside the joint staff and OSD (Office of the Secretary of Defense), to make the case about the Navy provides this capability best, this is how we could do it, and then the decision is made as to how you distribute those capabilities. That is the process that we are in. We see our war-fighting

division as a total part of the integrated joint war-fighting force. It is where the joint war-fighting force needs to go.

I believe a lot of that has to do with these themes about taking the fight to the enemy and not doing it on our own shores in the global war on terrorism, and the ability to make sure that key issues for our nation in terms of what we hold dear and where we want to go are protected.

Mr. SAXTON. The Army, as an example, is changing the structure and the way it does business, the new brigade fighting teams, the command structure and so on. Is the Navy preparing to dovetail with this new command structure that the Army is developing?

Admiral NATHMAN. If you don't mind, sir, I will let Admiral Dawson take a shot at that.

Admiral DAWSON. Sir, let me comment. You mentioned the future, and we have been looking at the future very hard. Operations from joint sea basing is what we have been focusing our attention on. We know that it is going to be a matter of access, time line and footprint ashore as we look to the future.

As we roll these into the models that we use to project what we need to support this, we have five elements that we look at. We look at how a future enemy will most likely fight. Second, we look at what types of rules of engagement might we be under when we conduct that fight. We look at bases and accesses that are available throughout the world. We are recently greatly influenced by the failure to get access in Turkey when we conducted operations this past year. So we know that joint sea basing is the way that we must go.

The fourth thing we look at is systems performance of those capabilities that we are going to project that we are going to have and need in the future. And then we round that out by looking across the naval team of what other joint and coalition share might come into how we conduct that fight. That is how we look at what we need for the future.

Mr. SAXTON. Some of the things that are in development or being changed today in terms of ways of doing business, the way the Navy does business, the use of technology, the use of for example, the SSGN submarines in a different way, these are all changes, are they not, that were made in anticipation of a different kind of a fight in the future?

Admiral DAWSON. Yes, sir. We had to be rapid and we had to be decisive when we conduct our initial operations.

Mr. SAXTON. Admiral Cohen, the Navy SEAL team delivery system, the new sub. How is it coming?

Admiral COHEN. That is not an area that I have been specifically involved in, but I have some familiarity with that.

Mr. SAXTON. Maybe I asked the wrong guy the question. I am sorry.

Admiral COHEN. Perhaps Secretary Young, as the acquisition executive, although he is not the acquisition executive for the Special Operations Command.

Secretary YOUNG. Actually, I am happy to let Admiral Cohen answer. [Laughter.]

The Navy is managing Advanced SEAL Delivery System (ASDS). The system went through I believe initial operational evaluation

here recently in the Pacific. There were some issues that arose on that. There are issues that have been discussed that we need to work on in terms of the battery life. I think it meets the requirements, but the Special Operations Command would like the system to be more robust in that area and other areas. Work has been done on some technical issues, some of which I might have to talk to you about in a different forum.

So I am not prepared to say we have the system in hand, but I am prepared to tell you that the operator was very pleased with the capability. So we have to sit down and work through reliability, maintainability and some technical issues, and reach agreement with them that the system is ready, then move forward with further procurement.

Mr. SAXTON. Mr. Secretary, could you just describe for us, tell us first whether or not you have some radar roadmap or radar master plan? Could you talk about it for a minute? I am sure you do have one. Could you describe it for us please?

Secretary YOUNG. If I could, sir, with some seriousness, I think the President's budget tends to be the roadmap for me. I believe the budget lays a viable roadmap and it does several things, some of which have been addressed in previous studies or roadmaps. There are legacy systems that we have identified that will be core to the Navy for many years and require support and possibly upgrade and investment on either capability or maintainability.

The fundamental I would say core to the radar roadmap are some decisions that were made this year and reflect what I spoke about in my opening statement, the remarkable collaboration we have had between industry and the requirements community. Those steps were changing DD(X) radar band to S from L. We had not seen the low cost that was hoped for on the L-band, and frankly we were going to have a frequency that would be only in one place. In S, there is a significant amount of work on, in fact as soon as we made the shift to S band, we found we could leverage some work that had been done for the Army in fire-finding technology, and apply it directly to DD(X).

Mr. SAXTON. You should have just listened to me years ago and you would have saved yourself all that time. [Laughter.]

Secretary YOUNG. So that S band, fortunately we have seen the light of your advice. It is now core to DD(X). The other path, the Navy is responsible for acquiring a Cobra Judy replacement and a second company will build the S band for that platform. Those two investments in S band I think create a robustness in the radar technology transmit/receive (T/R) modules, software, algorithms, processing, transmitter, exciter, the whole spectrum, and set the stage for a ship that is very important to the CNO and the operational Navy, and that is CGX. We foresee the ability to either have hopefully a robust competition for the best capability for CGX and have sources that are prepared to continue to modernize the Navy fleet as we look to a potential Aegis midlife upgrade and other factors.

So in my mind, the budget lays out a roadmap that is fairly robust and is funded for S-band radar development, setting the stage for CGX, continued sustainment of existing Navy radars and modernization steps we will take for the existing fleet. There are some

outstanding issues that are being worked with the Missile Defense Agency about how far they want to take some work in terms of its ability to perform missile defense. They are taking those initial steps, as you are very familiar with, to deliver the capability the president has laid in for what people call "Block 04" where Aegis will be supporting national missile defense as the Block 04 capability stands up. And then what steps do we take beyond that to continue to grow that capability.

Mr. SAXTON. Thank you.

Mr. Chairman, I have one more question. This is one that I would like to direct to General Hanlon. When I wear my Terrorism Subcommittee hat, we oftentimes talk about force protection. Of course, the Marine Corps gives us the opportunity to study one of the most potent fighting forces in the world, and we are very proud of that. But the Marines now face a different kind of a threat than perhaps we would normally think of when we think about Marines, improvised explosive devices (IED) et cetera.

What are we doing in terms of force protection? Are we making progress, particularly with regard to IEDs? What can we expect to see going down the road. I don't mean literally, I mean what can we see in the future technologically and otherwise to deal with these kinds of unconventional threats?

General HANLON. Yes, sir. As Secretary Young mentioned in his opening statement, he and I do co-chair a panel which we refer to as Operation Respond, which is designed to look at the very issues that you just touched on, sir. One of the advantages we had after Operation Iraqi Freedom, as you know, all the Marines by late summer had come back to Continental United States (CONUS). The decision was then made for us to put 25,000 Marines back into theater, of which your son is one and which of course that is ongoing as we speak right now.

Mr. SAXTON. Actually, it is my nephew.

General HANLON. Nephew, excuse me, sir. The advantage that we had with that was we were able to observe what was happening with the Army, the experiences they were having over there in-theater. We were able to send teams into theater to work with the Army, to actually capture their lessons learned as they were ongoing.

Let me start first with just the individual protection of the Marines. There are field gear, there are small arms protection inserts (SAPI) plates, things of that sort. We made sure that every single one of the Marines were equipped with what they needed to give them the individual protection that we felt was necessary. We have succeeded in doing that. In terms of the equipment that the battalions and the Marines are taking with them, their individual combat gear, it is standard-issue combat gear so they are well-equipped and they are ready to go.

Vehicles, that has been a challenge for us because of the large influx of explosive devices that have been in-theater, and they come in many different flavors, as you all know. Some are just nothing more than an explosive device that is buried in the side of the ground, that is triggered by putting a couple of wires together. Others are far more sophisticated than that, with remote devices. They have in fact been getting more sophisticated over the course of the

last year, which is one of the things we have been watching very carefully.

Because of that, we have been looking at how do we harden the vehicles that the Marines will be in. So we have a number of ways we are doing that, both with our High Mobility Multipurpose Wheeled Vehicle (HMMWVs) and with our trucks. We have a series of steps that we are taking to harden the vehicles all the way up to what we call a really hardened vehicle, all the way down to what we would call medium hardening. We are on track doing that.

We have been able to tie into some of the programs the Army had, plus we were able to get assistance from our own logistics facility down at Albany, Georgia, to be able to literally, if you can imagine this, sir, literally making steel bolt-on kits that you would actually bolt onto the side of the HMMWVs with blast blankets to protect the Marines. We are doing that and all the vehicles will be properly hardened by the middle of April.

As far as the IEDs are concerned, sir, again the Army and OSD had put together panels and groups to deal specifically with that issue. We have had our Marines fully embedded in that effort, both with the Army and at the OSD level. Anything that we are finding out, lessons learned, we are trying to adapt to. Any technologies out there that we can use, we are going to adapt to. Admiral Cohen right here to my left, who runs the Office of Naval Research (ONR) across the river, has been very helpful in assisting us in that regard.

It is serious business, though. I do not mind telling you that. At Quantico, I am responsible for the lessons learned for the Commandant. We did that in Afghanistan. We did it in Iraq, and I now have a 60-man team that is embedded with General Conway in 1 MEF as they go in-theater. One of the main responsibilities that team has, sir, will be to report back to me directly, I mean literally daily or hourly, however you want to do it, any lessons learned that we get, both in terms of the IEDs or material issues, all the way up to how we might adapt better tactics, techniques and procedures to train the Marines.

I would like to say one thing about the last one, too, that we were talking about just before we came in here. And that is that we have established that March Air Force Base out in California, which is an old air force base, and an old housing area, we have actually established under our war-fighting lab a facility out there where each and every battalion that goes through the rotation, that was going into Iraq, will go through a rotation at March Air Force Base where they are put through a special training package to prepare them for what they will see in Iraq. Role-players, vignettes, the whole nine yards, right down to the individual squad leaders, they are run through vignettes. At the end, they are critiqued to make sure that they handle that situation properly. The whole purpose of that, sir, being to make sure that we deal with the individual training.

So in fact as soon as this hearing is over, sir, I am jumping on an airplane to go out and see General Conway this afternoon before he jumps on an airplane Saturday to go over to Iraq, to run through the complete list of things that we have been able to deliver for his force before they go over. And to make sure he and I

have a mechanism in place so we can continue this dialogue while he is deployed.

Did that answer your question, sir?

Mr. SAXTON. Yes, sir, pretty much. The only piece of it that I thought you might refer to is the jammers for IEDs. I think there is also an even newer technology, if I am not mistaken, that causes them to explode before the target arrives on the scene.

General HANLON. Sir, I can tell you in this session right now, sir, that we are doing as much as possibly can. Yes, sir, we are. We have all the right people looking at that, sir. I think that if we wanted to go into more detail on that, sir, I might have to—

Secretary YOUNG. Could I add, Congressman, a comment on that? A few months ago, Secretary England spent several hours at the Naval Research Laboratory (NRL) with Admiral Cohen's team and the warfare center teams, and every technology he could put on the table, from hardening to IEDs up to a classified level. He has continued to meet about monthly on that.

This has the Secretary's highest priority. The Secretary is adamant that we want the Marines to go in safely and effectively in Iraq and do everything possible for them. He views frankly everything in the budget is tradable in an effort to make sure the Marines have everything they need.

We visited Camp Pendleton recently. General Conway has shown a remarkable and great interest, he and General Amos and General Mattis, in taking technologies either that have been tested at Yuma or are so promising they are willing to take them into theater if they solve a problem for them. So Secretary England personally is trying to make sure we have everything we need in this area.

Admiral COHEN. Congressman, if I may just follow up, because Secretary Young and General Hanlon are I think too modest on this. The Secretary is very much personally involved, and the net that he asked Secretary Young and I to spread was not just for what we call a naval research enterprise. He asked us to look throughout the department of defense. I know you have been briefed on the Counterterrorism Technology Task Force which was stood up after 9-11.

He asked us to look at industry. He asked us to look at academia. He asked us to look at other departments in the government. He asked us to look nationally and internationally. We are drawing on all of those technologies. It is much to the Marines's credit, and they have a long history of this, of being willing to experiment and bring promising technologies to bear in the field. We are very much involved with the Army in this, as General Hanlon has indicated.

Also, it is a true blue-green effort. Admiral Dawson is helping with the dollars on the blue side in support of green, and General Hanlon has been very kind to give me a gunny sergeant, along with my master chief, at ONR where under Secretary Young's guidance, we have Web-based input so the Marines in the field can tell us real-time on what we call tech solutions, what they are experiencing, what their needs are. And we then can provide the funding and the solutions pushed directly to them.

Mr. SAXTON. I am sorry, Mr. Chairman, I should not do this, but this is important. I know you know it is. Once you have identified a technology, are we generally capable of producing the items that you need to put into effect the technology that you have identified?

Admiral COHEN. The answer is absolutely yes. Working at Aberdeen with the Army's Armaments, Research, Development, and Engineering Center (ARDEC), you heard General Hanlon talk about the use of Albany and the Marine Corps systems command to provide these kits. But we have offered up, Secretary Young has offered up naval shipyards, where we have plenty of capacity, to cut these things. We are working with what is called explosive resistant coding, which came from the Air Force following the Khobar Tower tragedy. We briefed you previously on that, how we would provide that to a Cole scenario.

So we are not being shy and the CNO and the commandant and the secretary really are joined arm in arm in this. They make the funds available. It is a great credit to Navy leadership, the dedication they have to these young fighting men and women.

Mr. SAXTON. Thank you, Mr. Chairman.

Mr. BARTLETT. Thank you very much.

Mr. Langevin.

Mr. LANGEVIN. Thank you, Mr. Chairman.

Gentlemen, I want to thank you for being here today and for your service to our country, as always.

I want to focus if I could on three areas: R&D with respect to submarines, the upcoming Base Realignment and Closure (BRAC) as it relates to R&D facilities, and also the present and future roles of Unmanned Underwater Vehicles (UUVs). Let me start with Secretary Young and Admiral Nathman, if I could, I would like to hear your thoughts about the status of our submarine R&D programs. Over the last several years, we have seen a significant reduction in submarine-related R&D in your budgets. For example, the *Virginia* Class technology insertion program was completely eliminated last year and is not funded again this year. Congress, of course, has tried to improve our submarine platforms by increasing funding for such programs as the submarine and SSGN payloads and sensor programs and the multi-mission module for *Virginia* Class submarines to increase the submarines's contributions to future fleet missions and requirements.

We would like to see the Navy's commitment to support technology development by keeping a consistent level of submarine R&D funding over the years to add to the capabilities that we all agree that we so much need. So could you start by commenting on this?

Secretary YOUNG. I will offer an initial couple of comments, Congressman. As you know, I think the first priority for the Navy had to be stabilizing the *Virginia* Class program at these low rates of production with a two-year build strategy. In funding that program and finding the resources for the economic order quantity funds that are required to go into a multi-year and fully funding the *Virginia* multi-year, it put significant pressure on resources. So we did have some reductions in advance submarine development.

Congress put some funds in there which were helpful. We had a strategy, though, that I was anxious about that said we would

change every single submarine. I must tell you, we need to think about that very carefully. That is an enormous burden on the manufacturing enterprise. It is an enormous burden on the training enterprise.

I think you are seeing us gradually try to move to a more block-like approach, where two or four submarines will have a stable configuration, and then we will in a smart way insert upgrades into the next block of submarines so it can be planned with less disruption to the manufacturing process and more ability to train people and maintain those systems.

So you see that I think in this year's budget, where the funds are coming up from last year's budget and then in 2006 and out we get back to that level that Congress anticipated at the \$115 million to \$120 million a year level of investment for the submarine. With that, we will bring you a strategy that I hope will let us efficiently build in those technologies into those submarines, because of the time when a lot of the debate about the multi-year was, can we stabilize the cost on *Virginia*? Multi-year lets us do that and a more careful strategy for inserting technology in those submarines lets us do that.

Admiral NATHMAN. Sir, I would comment to Secretary Young's point, the key thing is get stability in *Virginia* Class. So we made some affordability decisions, and you know, there is a key technology out there in terms of volume increases for *Virginia* Class in terms of their advance sale. We have slowed that down as part of the affordability challenge, but we are still committed to it.

I think our focus in submarine research and development has been all around our opportunity of look at the payloads, to change that payload; to look at our volume and delivery capability that we get, because of the covertness of the submarine platform; to look at better propulsion, better controls; and of course improve where it is important to protect the stealth and maneuverability of that platform, particularly in its denied access, anti-access role.

So we are staying true to the school in terms of our over-arching intent, in terms of submarine research and development. We have made some affordability decisions that has slowed some of these things down, but that is where we are in terms of the budget that we recommended on this.

Mr. LANGEVIN. If I could just follow up, it is my understanding that it takes as much as 15 years from start to finish in terms of developing and fielding new technology. It is my understanding that right now is the first time in a quite a few years that we do not even have a next generation submarine on the boards right now for R&D. Is that correct?

Admiral NATHMAN. That is correct, sir. Given the fact that we are committing right now, I think what we are saying here, it is kind of the same analogy we have with our aircraft. We have a tremendously capable platform in *Sea Wolf* and *Virginia*. Part of this would be understanding, to Secretary Young's point, is what could you do in terms of the spiral improvement around those classes of submarines to really make a trade between building a new class of submarines or dramatically improving the needs based on where the war fights may go with those particular submarines?

I believe that is our view. Part of our view is that some of these payload capabilities and the ability like in the multi-task underwater vehicles is an example, that is a payload opportunity for us that we see. Could we leverage that in SSGN? Can we leverage that in other places? This is what is going to bring about an effects-based difference, I believe, from our submarine capabilities, instead of focusing in a very expensive way on a new class of submarine.

So I think this is just really a phasing that makes sense when you are right at the start of a new submarine class, right after a new class of submarine called the *Sea Wolf*. This, to me, is a logical part of it here. We need to have a certain amount of re-set time in that area. The next part would be, does your research imply that you ought to make more volume improvements in the current class that you are building, or do you want to go on to a new class? I think this is where the research and analysis will take us.

Secretary YOUNG. I think we are looking at a significant run for the *Virginia* Class submarine program, as you know. Within the submarine technology programs, the sheet of paper is open in terms of what is considered. Consideration is given to whether that would be something that could go on *Virginia* or something that would require a different submarine design to do it. You may be familiar with the Submarine Technology Center they have down at the Navy Yard where there are conceptual work or designs for different submarines, different hull forms.

So at a modest level, we are laying the groundwork for a new submarine design, but I think it would be premature at time to be launching a new submarine design when we have several years of *Virginia*, where we are looking for the first delivery this summer, ahead of us.

Mr. LANGEVIN. Maybe now would be a good time to go into the next area that I wanted to talk about, the UUVs. I do not know if Admiral Nathman or Admiral Cohen would be better to answer this, but could you just provide us with an update on the Navy's research into UUVs? What would be the main capabilities and mission functions of the UUVs? How would they be integrated into the larger force structure?

Admiral NATHMAN. Yes, sir. I would like Admiral Cohen to comment because he leads kind of a funneling effort in science and technology, and the opportunities we have in terms of discovery that we can then be more pragmatic about in our R&D and in our procurement investments.

I think if you look at the range of where we are in our views of the underwater vehicles, I would look right at the long-term mine reconnaissance system as a good example. It is a very capable system in terms of its CONOPS. It would clearly be serviced better if we could get more persistence out of the same CONOPS. So you have a capable system in terms of mine reconnaissance. You have a sensor, you have the CONOPS right, you are able to deploy in a current submarine force, and you need to buy the right numbers of those.

But one of the opportunities we have is, and we are seeing that in some of our discovery in terms of these long-range underwater vehicles, you are seeing this multi-reconfigurable underwater vehicle kind of experimentation and demonstration work, that if you

can change the volume of that and put these same CONOPS into a larger volume, you change the whole persistence of those vehicles. Therefore, you change the opportunity to the Chairman's point that he made last year, about seeing the battle space, the intelligent preparation of the battle space.

This is kind of the organizational construct that we have. This is where our analysis is saying that this is where we have an opportunity to go. So you have the CONOPS being developed. You have basically the physical part being resolved. Now, what can we do? We see the same kind of effort in our remote mine hunting system right now, which is a semi-submergible. You see it in our mine neutralization system. These are now, we are delivering the capability in CONOPS. Now, what can we do to rapidly change that in terms of either more persistence time or better sensors?

So we are very much into a spiral along our current systems to improve them around volume and payload, and we are very much connected with the work done by ONR, and Admiral Cohen will comment on this, about how you funnel those opportunities down into our procurement accounts.

Admiral COHEN. Congressman, if I may follow up. Thanks to the leadership of Congress, we are going in all areas, in air, surface and submarine, into the unmanned arena, which is so complementary to everything else that we are doing.

I am a submariner and I am also an ocean engineer. When I came to the Office of Naval Research four years ago, I must tell you I was very critical of our unmanned underwater vehicle efforts. I got the group together and I said, you know, these are toys. These are academic toys, and until some fleet commander comes to me and says, I need that capability to do this mission, they will remain toys.

Now, some of them are very sophisticated, like Manta and we have others which are wonderful technology demonstration platforms. I am so pleased to tell you, I do not take any credit for this. This is our industrial base and our laboratories and industry et cetera, that during Iraqi Freedom at Um Qasr, where we brought forward our Dolphins to try to find the mines and clear Um Qasr so that the Brits first and then the rest of our logistics forces could go in there and provide humanitarian relief, we were called on to provide the REMUS (Remote Environmental Monitoring Unit System). REMUS comes from Woods Hole. Industry was involved, et cetera. And while the Dolphins were out cavorting in the Persian Gulf, the REMUS were working around the clock, only stopping to recharge their batteries to find the mines and help us clear that important port.

But there are many, many challenges for UUVs that we do not have either on the surface or in the air because those are air breathers. We must figure out the fuel cells and other power capabilities. We must get the sensors right. Underwater, we fight at the speed of sound. Everywhere else, we fight at the speed of light. And Admiral Nathman has addressed the desire to have a common picture complemented by a common underwater picture. We have to get those sonic signals very quickly translated into electronic signals above the water so that the battle group commander and higher authority see the entire picture that is critical in the littoral.

Finally, it does not have to be a high-end. Right now, as we are bringing SSGN on line and we have those 7-foot diameter D-5 tubes that are 30 feet long, we are looking very hard at a large UUV as a truck. So with persistence, with power, with load-carrying capability, operating off either an SSGN or off a Littoral Combat Ship, you now open up a trade space that we can use for mine hunting, personnel insertion, surveys, anti-submarine warfare, et cetera, but we have to get the vehicle right. The simplest one, if I may, we have a wonderful torpedo. The Mark-48 torpedo helped us win the Cold War, but it did not work very well in the littoral.

So we went to the Underwater Warfare Center in Newport, Rhode Island, our torpedo experts, and 3 years ago we asked them to cut a Mark-48 torpedo in half, cut it in half and put a new nosecone on it. Now, everyone wanted me to put an electric tail on it and this or that. We paid for all of that. We knew how to do that. We went ahead and we did this and the goal was to find in the littoral a 1-meter tethered mine, because if you could find a 1-meter tethered mine, you could find a 7-meter submarine, but the opposite is not necessarily true.

I am pleased to tell you that a year ago we tested it at Lake Seneca, and this spring we fired it at Artech. It has met and exceeded all of its expectations. Why is it a half-torp? Because now we have the ability to put double the number of torpedoes in a 688, 52 instead of 26, and because it can find that mine, any submarine or any other platform that might use this, including a helicopter, can shoot its way in or out of that kind of environment. So that is also a UUV. It is just a real deadly UUV.

Mr. LANGEVIN. Thank you, Admiral. They said you have the best job in the Navy.

Just to wind up on BRAC, Admiral Nathman, if you could answer this. Like several of my colleagues, I have expressed concern about how the 2005 BRAC round will proceed with regard to R&D facilities. Can you tell me your view? How would you characterize the military value of facilities such as the Naval Undersea and Surface Warfare Centers, and to what extent will you be involved in the work of the technical joint cross-service group in establishing criteria for R&D assessment?

Admiral NATHMAN. Sir, I would just make a general comment that our Centers are excellent, whether in mine warfare or air-to-air systems. They are important to our services. I am also satisfied that the BRAC process that OSD is establishing in terms of how do you look at the capabilities that we want, is a process internal to the Office of the Secretary of Defense and we are very much integrated, the Navy is very much a participant in. That, I think is really where I have to leave the BRAC answer right now, because we provide support inside of that staffing effort.

Perhaps Admiral Dawson would want to comment on that, and Secretary Young. I was looking for help. [Laughter.]

Admiral DAWSON. I can only add that we in the Navy are satisfied with the process and the way it is being undertaken. We feel that we have the opportunity to input those things that are of core value and of great significance to us.

Mr. LANGEVIN. Thank you, gentlemen.

Mr. BARTLETT. Thank you.

Mr. Simmons.

Mr. SIMMONS. Thank you, Mr. Chairman.

I thank my colleague, Mr. Langevin, for asking all of my questions. [Laughter.]

Very good questions. Now he has put me in a position of having to make up a whole bunch of new ones. But anyway, that is all right.

First of all, transformation. I really commend the Navy on its transformation efforts. I have been on the Armed Services Committee for three years. I have been in the military, active and Reserve, for over 35 years. I am proud to say with the U.S. Army, but unfortunately I have to say objectively, the Navy has done the best job of transformation that I have seen in my experience. I think it is very impressive.

I think it is impressive that under the leadership of the Chairman, we have multi-year procurement for the *Virginia* Class sub, because that is going to save the taxpayer almost \$400 million and it is going to stabilize the workforce and the 1,200 subcontractors all know that they have an opportunity to keep people employed, and also to upgrade their equipment and increase their productivity.

So I think those are revolutionary events. I think the *Virginia* Class submarine and the *Trident* conversion are extraordinary programs and it is very exciting to be involved with them.

I do have two questions, and I will not repeat what Jim asked because he laid out my other concerns. One goes to ASDS. For the life of me, I am not sure why that program went to a great company, but a company that has not the same sort of track record that perhaps Electric Boat has in submersibles. I remind the panel that when General George Washington wanted a submarine, he went to Connecticut for it. He got the *Turtle* for the Revolutionary War. When the Navy wanted its first submarine delivered, they went to Electric Boat in Groton. I think the problems with the ASDS are really the fact that a very good contractor did not have substantial experience and a substantial track record in submersibles. I would be interested in your comments on that.

Second, the issue is raised about a new generation of submarines. I concur with the panel's response that the *Virginia* Class fits the bill, and with the module concept, we can continue to transform that in many different ways into the near future. But I recently had the opportunity to kick the tires on the NR 1. When I say "kick the tires," in fact the NR 1 has tires. Has any of the panel been around the NR 1 recently, in the last year or so, or two years, or three years?

You know, it was state-of-the-art, I think, 30 years ago. But I was frankly amazed at the condition of it. Granted, I saw it after it had been lifted out of the water, so there was a lot of junk on it. But unless we conceive that the multi-mission modules in the *Virginia* Class are somehow going to replicate the types of research that the NR 1 does, I really think we should be looking at something that would be an upgrade. I would be interested in your comments on that as well.

Do you understand what I mean when I said I kicked the tires?

Admiral COHEN. Oh, yes sir. [Laughter.]

I had the opportunity in 1967 to crawl on NR 1 before they joined the hull and before the reactor went critical. The reactor is about the size of a small garbage can. It has view ports and so on and so forth.

I have served on Electric Boat submarines. They are absolutely premier submarines. But to follow up on the unmanned underwater vehicle comment, and I know you are familiar with Dr. Bob Ballard.

Mr. SIMMONS. Yes.

Admiral COHEN. One of the great arguments that rages—

Mr. SIMMONS. As a state representative, I was involved in the process of sneaking him away from Woods Hole and bringing him to Mystic, Connecticut, which is my home town.

Admiral COHEN. He has made a slight adjustment, as you know, back to the University of Rhode Island (URI), but his heart is in the right place.

Mr. SIMMONS. Just for lectures.

Admiral COHEN. Yes, sir. [Laughter.]

But the great debate that rages is manned versus unmanned in terms of exploration. I had the honor of being with Bob Ballard when he went to the Solomon Islands and we found PT-109. I also had just before Christmas the pleasure of diving 1,500 feet off of Hawaii on the NOAA (National Oceanic and Atmospheric Administration) and University of Hawaii small submersible and being 3 feet away from the Japanese midget submarine that was the very first casualty from the *USS Ward* at 0700 on the morning of 7 December as it tried to penetrate our defenses.

At the end of the day, it is a balance between putting the eyeball at depth and putting the sensor at depth. I think we have that balance about right. Without getting classified, Electric Boat is building currently an incredible platform that will give us an ability to do research potentially without putting a man at risk and great expense, because of the manned systems.

So NR 1 recently refueled. As you know, we maintain very high standards. She will be around for a long time. I am not aware of any plans for an NR 2, but there are plans for an Alvin replacement. Then of course, the big argument is, should that be a 20,000-foot vessel that gets you about 90 percent of the ocean's bottom? But Bob Ballard tells a great story, after he found the vents, he said he took down the appropriate scientists and he was on the bottom of the ocean and he was looking through the view port, and of course they had very high-resolution cameras, and they had monitors inside this very small sphere. He was looking for the geologist that he had brought down with him, and the geologist is looking at the camera image.

And Ballard says, he tells this story publicly, he says, no, no, through the view port. And he looks and he says, no, the image is better here. And the light came on for Bob, and this is why the JASON project, and he said, wait a second. If we can do this remotely, then we can transmit. It is a little bit like what we were trying to do at FORCEnet and the common picture, get the sensors out there, but then integrate them and fuse them. He said, I do not have to fly that geologist to Kuala Lumpur and then put him on a boat and have him go out. He said, I can transmit the image real-

time. And that scientist at Woods Hole, University of Connecticut or California or wherever, can then direct via space the deepest ocean, the actions of that remotely operated vehicle (ROV) or submersible.

So I think your concerns are valid. I think NR 1 will be around for a while. I know it is a long answer. It is not a military answer, but it is a very important to know.

Mr. SIMMONS. I think it is an excellent answer because essentially what you are saying is, transformation technologies in the *Virginia* Class provide us with a platform to use UUVs or other sensors to accomplish the task better than what we did with our eyeballs underwater years ago. So I think that does answer my question.

Now, ASDS, I do not want to embarrass anybody. I think the contractor is a great contractor, but I think this program has problems. I wonder if any consideration has been given to transferring the program to another vendor who has more substantial experience in underwater systems.

Secretary YOUNG. Sir, there is no question there have been growing pains and a steep learning curve, but the program was competitively won by the contractor that is performing the ASDS work. At this point in time, they delivered, as you know, a system. As with many systems, we are finding things we need to adjust. The battery life issue is a challenge for anyone here. This is a small vehicle and you want substantial life out of it, and it is pushing the limits of technology. In fact, to address that new technology, new battery technologies are being brought to bear as the likely upgrade to that.

So it is less about the manufacturer than where we asked that vehicle to go with technology and other places. I think industry would not deny that the learning curve was steep and the pains were serious. But recently, we made a decision that we will build the follow-on vehicles with that company at this point in time. As you can appreciate, as with *Virginia* and others, it is very difficult once you have gone through those growing pains and that learning curve, and the company owns the designs and the manufacturing process, to decide to just disrupt it.

I am certainly open to them having discussions with other companies that could help them do this better, because I think we are moving forward with the program and Congress has brought serious pressure to bear. Congress has asked for an independent cost estimate, and the cost of that vehicle needs to come down. I would welcome industry working with other industry partners to see if there are options there.

Mr. SIMMONS. Let me just conclude, Mr. Chairman, if I could, with a brief comment. It all goes to teaming. You know, my view is that in the submarine manufacturing business, teaming has eliminated unproductive competition. The teaming arrangements between Newport News and Electric Boat have worked marvelously well, and yet when I first was introduced to both of those companies in the early 1980s, the competition was tearing them both apart, tearing the workforces apart, resulting in underbidding on contracts and shoddy work.

As a staff person for Senator Chafee, who was the former Secretary of the Navy, we went through that mess. The current system that we use for submarine design and production, which is a teaming effort, is not unlike what we do with aircraft carriers, where we have not had competition for 40 years, 45 years, and yet we produce the best aircraft carriers in the world.

So it seems to me that this is another program, a smaller program, albeit, where teaming would have saved us a lot of time and energy and maybe their learning curve would not have been as steep because part of the team would have been in this business for 100 years. Admiral Rickover in testimony a number of years ago made the statement that the key to submarine warfare is the submarine designers. Building is critically important, but design is even more important. We know where the premier designers are.

So it may well be, Mr. Chairman, that at some point that this subcommittee might recommend a teaming arrangement to try to get its arms around this program, which albeit is a small program, but nonetheless you can always underbid on a program and then have cost overruns. So I would say it is an example where competition has not really served us that well.

Secretary YOUNG. If I could, Congressman, it was an initial competition some time ago, and I think I would agree with many of your lessons and comments. At some point down the road, your option has been to get to close and you become a partner, appropriately so, with an industry provider. The model that is like what you said, I think we are trying hard to implement in DD(X). We have a national team leveraging the designers of destroyers in the country to work together.

At some appropriate future point, we will, I think like DDGs, have some form of competition between the yards to get the best cost. But that point is, as we have recently announced, not near-term and appropriate because we cannot afford the detrimental effects vis-a-vis the positive benefits of having the best designers working cooperatively to make the best design that is producible, and both yards getting in the business of producing, and then we can work forward from there.

So I would agree with you, and we are applying those strategies when we have them looking forward. Looking backwards is a challenge, but we are open to that discussion.

Mr. SIMMONS. Thank you very much, and thank you, Mr. Chairman.

Mr. BARTLETT. Thank you.

In fairness, isn't what is now being built very different than what was proposed and bid on, which was in effect a torpedo with hand-holds, and now they are encapsulated inside? Isn't this very, very different? This migration was not primarily the fault of the contractor, is that not true?

Secretary YOUNG. I would like to get some details for the record, but a substantial amount of that is exactly as you have said. That is another challenge we have in programs is making sure once we have a competition and award a contract, that we have stability in the requirements. The requirements in this system have moved substantially.

Mr. BARTLETT. General Hanlon, I note that you are outnumbered at the witness table by your Navy colleagues. I thought you might get some comfort from a statement that one of my constituents made at a recent town hall meeting. They noted that the responsibility of the Navy was to get the Marines to the theater. [Laughter.]

General HANLON. Yes, sir.

Mr. BARTLETT. That was the responsibility of the Navy, from their perspective, to get the Marines to the theater and to bring them home.

General HANLON. And they are doing a good job of it.

Mr. BARTLETT. Mr. Taylor.

Mr. TAYLOR. Thank you, Mr. Chairman.

Just a couple of last questions. A couple of weeks ago, I was in Colombia meeting with the country team, and the subject of intelligence came up. I asked them what sort of benefit were they getting from the P-3s flying out of Manta? And Mr. Natter will be my witness on this, so as not to, well, I am trying to be polite about this, but they trash-talked it, quite frankly. They said that we could shut down Manta and the P-3s and it would not make any difference at all. I was taken a bit back by it.

My question for the panel is, is that a capability problem? Is it because the planes are getting old? Is it because the electronics are old? Is there a plan for something to replace the P-3s, or has that mission gone away? Is it something we just do not need anymore?

Admiral NATHMAN. Sir, I will try to take it on. I will have to get back to you for the record for why they made that particular tactical comment about intelligence, but the reason why the P-3 is down there are for operational levels of intelligence, which then are fused in. You deliver a tactical level. So it could be the way the fusing of the intelligence is done. I think we have to go investigate that a little bit to find out why it looks that way.

Our P-3 force was a maritime patrol and reconnaissance force. That was the context of the force. In many cases it was kind of equally weighted between anti-submarine warfare and surface surveillance, as it were. We have watched our P-3 force because they have a great capability in terms of sensors, in a sense being pulled off a little bit in terms of their focus, from the maritime surveillance and anti-submarine part, to more near-land capability.

In fact, we had P-3s over Afghanistan and over certain parts of Iraq. This is interesting to me as an individual who has spent a great amount of his time in air warfare, that we would put a very large, poorly maneuvering, relatively poor, not compared to an airliner, but certainly compared to a fighter, with not a whole lot of electronic protect, over certain battle spaces. We would not have done that a long time ago, but that is because our commanders knew an awful lot about the battle space they were flying in.

That is clearly not the role, or why we bought that particular airplane and purchased it. We have re-centered our requirements around anti-submarine warfare and maritime surveillance. We made that decision when we moved on to multi-mission maritime aircraft, which is really around the primacy of ASW, which is a clear war-fighting gap for our Navy. It does have second-order maritime surface surveillance capability which comes with those sen-

sors, but we moved that capability to our broader maritime surveillance unmanned air vehicle that will provide the maritime surveillance picture.

So we have been caught in this demand signal by the Combatant Commands (COCOMs) for more and more surveillance and the P-3 provides that capability, but in a way that is not what the airplane was tailored for. Now it is doing overland surveillance, when it really was tailored for maritime surveillance. That is a decision that I think the joint force is coming to grips with about what does your distributed sensor strategy want? Well, that is why you are seeing lots of focus on unmanned vehicles, lots of focus by the Army, Marine Corps and the Navy on vertical as well as unmanned air reconnaissance vehicles, that you are seeing in terms of Predator or Predator B, Global Hawk and Eagle Eye and Fire Scout.

So that is to go after this overland surveillance capability. Since those do not exist in broad numbers, we frankly have a perturbation of the mission of our P-3 force. So what that has led to is a very high demand, high usage rate, that has now put us in kind of this constraint if we have to limit the way we fly these airplanes to ensure that that force can transition to its follow-on capability. But we have re-centered the mission of our force.

We are trying to bring back the current force to a more maritime focus, but recognizing that the joint force has compelling needs that we resource. We have been resourcing COCOMs for land surveillance for some time now. I think the joint force will come to grip with this as we buy these unmanned vehicles and we bring back our primacy issues back onto our multi-mission maritime aircraft.

General HANLON. Mr. Taylor, if I might just make one comment. I do not have a clue why that comment would have been made down in Colombia.

Mr. TAYLOR. General, I want to make this clear. I was somewhat offended on behalf of the Navy. These guys were not polite.

General HANLON. Here is a thought for you. Admiral Nathman is right. They were used extensively in Iraq and Afghanistan because the Marine commanders asked for them, because they knew what the platforms would do and John is right, they are a rather vulnerable aircraft, yet we put them as far forward as we could because in that fight, our commanders wanted that platform. It might very well be that because of the terrain that we had in Afghanistan and in Iraq, it really optimized that particular platform. Whereas in a place like Colombia, it might make it a lot more difficult. I am pulling it out of my hip pocket, sir, but I know the commanders with 1 MEF certainly liked it.

Mr. TAYLOR. I guess, Admiral and General, my question is, the P-3 is an old platform. We do have a lot of other alternatives that were not available when that platform first came on line. Is it going to be phased out and nothing takes its place, because we now have these satellites, we have the remote-sensing vehicles? Or is there something coming on line similar to, but more modern than the P-3?

Admiral NATHMAN. In the near term for us, as an example, some of the overland surveillance, the streaming video needs will be our view of this, of our B-2 AV, our Fire Scout, to go after that is the littoral mine surveillance. We also have littoral surveillance capa-

bility in the follow-on multi-mission aircraft (MMA). So those core missions are going to be replaced. There is a transition strategy with those core missions.

Mr. TAYLOR. Okay. Next question.

Secretary YOUNG. Congressman, could I add to that?

Mr. TAYLOR. Sir?

Secretary YOUNG. Any of us could answer this, but the answer to your question is, because of what people have seen in the P-3, Admiral Nathman and Admiral Dawson went in and there is a discrete set of modifications and support investments that are being made for the P-3 fleet to keep it alive out to just beyond the 2010 time frame. We have in hand right now the proposals for the multi-mission aircraft that Admiral Nathman mentioned, called MMA.

We will be making a source selection in a couple of months, hopefully in the May time frame, and proceeding. There are two candidates. That is the replacement for MMA. It gets a more modernized air frame, more supportable air frame out there doing the mission. It will work in conjunction with the broad area maritime surveillance system, which is likely to be a large, long-endurance air vehicle. So we have a modernization strategy to address that, on I think all of the issues you are raising, and those are in the progress of competition right now.

Mr. TAYLOR. On a trip to the hospital at Landstuhl in Germany in December, I met a young lieutenant who had a piece of steel by her bedside, and it was roughly about the size of a human eye, that had been part of an improvised explosive device that thank goodness had been exploded a bit prematurely. It had gone through the engine compartment of her HMMWV, lodged in her calf. They were able to save her leg.

The point is, for a nation that is spending over \$10 billion a year on anti-missile defense, it just struck me as an incredibly primitive way of looking for IEDs is to send someone out in a HMMWV, and literally their job was to drive down the road, and Congressman Bartlett was with on this trip, and look for IEDs, in an unarmored HMMWV. She says we saw it and it went off.

I would contrast this with the National Center for Remote Sensing that happens to be in my congressional district. I have learned a few things from them. One is that they can spot gravel deposits from space because of the heat generated by the gravel. They can actually tell us which trees in a forest have pine beetles, and then using GPS tell the foresters which one acre out of a half-million acre forest to go level.

I have to believe that using remote sensing and thermal imaging must be a better way to identify IEDs. If we are going to spend \$10 billion on something that is going to be a threat down the road, again I have been following this and I noticed again with some dismay that today's casualty was another victim of an IED. Every kid from Mississippi that has been killed over there has been a victim of an IED. Most of the kids who have been wounded over there from Mississippi have been victims of IEDs.

I would ask you gentleman, in addition to what you are looking at, to look into that. And last, I would ask you to weigh in on the decision to bring on line the cell phone system in Iraq. I am told that Lieutenant General Brown of the Special Operations Com-

mand has expressed his concerns that when this goes on line, you will potentially put another nine million detonators in the hands of the Iraqi people.

I know we are trying to get some normalcy over there and I know that we are trying to teach them capitalism over there, but maybe capitalism ought to take a back seat to the safety of young Americans that are stationed over there. Maybe they can wait a little while on the cell phones. I would ask you gentleman to at least think this thing through.

I am told that, yes, there are other ways to set off an improvised explosive, but what you get with a cell phone is a greater range. It gets you a little bit further away from that convoy, and then for a good more deniability as for who actually detonates it. I would like to hear your thoughts on that.

Last, since you have been so generous with your time, I am impressed with the military's willingness to try to make the most of the dollars that citizens give them. I understand that lowering crew size is a part of that and I understand that smaller platforms are a part of that. But I will tell you what I do not hear much of. My buddy here has raised some great concerns about our vulnerability to electromagnetic pulses.

I am concerned about our vulnerability. We are an incredibly fuel-dependent force. I do not hear the talk of fuel efficiency much, as something, and a potential foe has got to realize how dependent we are on fuel and that therefore that becomes a vulnerability. What are we doing to minimize our fuel dependency and therefore minimize that vulnerability? I just do not hear much of it, and I don't think you would be the guys who would be looking into that.

Secretary YOUNG. Can I respond?

Mr. TAYLOR. Yes, sir.

Secretary YOUNG. I am not sure I am the right person on the cell phone issue, but on what I refer to as change detection or the ability to sense a disturbance of the ground and where potential IEDs or other things are, that is high on our list. General Hanlon and I have been trading emails the last few days. When we visited Camp Pendleton with Secretary England, General Conway expressed an interest in that capability. My experience thus far is that satellite-type systems may have a tough time.

Mr. TAYLOR. But if you can do that from a satellite, what could you do from an unmanned helicopter? What could you do from a helicopter, et cetera?

Secretary YOUNG. An answer is we can, and we are looking to grab both infrared and hyperspectral systems and run them through this operation response process, make sure they are mature enough and the algorithms have been set up to detect in Iraq. We have some that have been set up to detect from submarines, some of them have been set up to detect mines in water, and some that have done some overland work. We are making sure we have that right and we are looking to push that capability into the theater as fast as we can. There is an interest in it in the Marine Corps. I know the Army, I cannot speak to the details, it was using that to some degree. So I would agree wholeheartedly. We are on that path.

Changing subjects dramatically to your fuel issue, I would just comment that in the DD(X) design, the industry team has looked very carefully at setting up that power plant with the combination of the diesels and turbines, such that that ship has the potential to be very fuel efficient and only use turbines when speed is of the essence. At some point maybe we could bring you some details about that. I think you would find we are considering that in many cases. You have to walk that careful line of not compromising speed, which can be, as Admiral Nathman has talked about, effectiveness in combat.

But we are looking very hard at Operations and Support (ONS) costs and how we design our propulsion plants, both in LCS, DD(X) and other ships, to be conscious of those fuel dependencies you are talking about.

Mr. TAYLOR. Secretary Young, there was something I saw on a ship we bought from the former Soviet Union. It was a roll on/roll off. We added a mid-body section to it. The name of the ship is the *Wheat*. When I visited the engine room, I have to tell you it looked like something straight out of the 1950s, with one exception. They had done something I thought was pretty interesting in taking the exhaust gases of the turbine and using them to generate steam to boost the horsepower by, I want to say, 5,000 horsepower.

At the time, it was not on line because the Coast Guard had some safety concerns about the system itself. I do not see a lot of that on our part. Again, I do consider, if I was trying to sit out there and say, how do I hurt Americans, certainly one of the ways I would try to hurt Americans is to go after their fuel sources, since we are so fuel dependent. I do not see a lot of the effort on our part, and I did read your testimony. I don't think the words "fuel efficiency" were in there.

Yes, sir, Admiral Cohen?

Admiral COHEN. Congressman, your points are very well taken. Fuel efficiency is a national issue.

Mr. TAYLOR. Unfortunately, Admiral Cohen, our nation does not seem real focused on it. It is not just the military. The entire society is not focused.

Admiral COHEN. But we are focused on it in the Navy. Admiral Nathman, when he is flying that F-18, is thinking a lot about fuel efficiency. He is thinking about his cycle. He wants to know he can get back on board that carrier deck before he has to tank, and when Admiral Dawson has command of the *USS Princeton* and he is out there all alone on operations, he is very much worried about his tether to the tanker, and so on and so forth.

So we have done an awful lot over the years. As you know, we have put a step on the stern now of the DDG-51s, which not only gives us significant fuel economies, but give us an extra knot in speed because of the hydrodynamic advantage. Several of us at this table are old steam engineers, as well as gas turbine engineers, and we know about regeneration and use of recycling and so on and so forth, and what the Russians did. We have done that. You always have to balance the capital investment, the simplicity of the plant, and the maintainability. Those exhaust gases are corrosive and all of a sudden you can end up with a major steam leak.

We use waste steam on our carriers today from our nuclear reactors to provide steam heat throughout, and service the carrier. But as we go to CVN-21, we have determined that you look at the capital cost, you look at the maintenance, you look at the total of the ship cost over the life of the ship, we are going to take CVN-21 and make it all electric. The beauty of all-electrics is that, and we are going to that, that is DD(X) and there will be CVN-21, and I believe follow-on flights of LCS.

When you can operate the prime mover, whether it is a gas turbine or a diesel or whatever it might be, at constant optimum speed, just like GM does with overdrive on their cars, they get 35 miles per gallon at 65 miles an hour, but not in the city. If you can operate at constant speed, with electric generation and electric drive, decoupling what the mechanical connection does for you, we will enjoy a very significant improvement in our fuel efficiency. Not only that, emissions go down. So it is really a two-fer.

So I think your point is very well taken. We are very actively involved in this, and in large measure fuel cells are a very important aspect because for our Marine brethren, one gallon of water, one gallon of fuel at the pointy end of the spear takes an enormous pyramid to get it there. If we have a HMMWV that operates with a fuel cell, it is its own generator. It gives those kids warmth at night. And you know what the waste product is? Water. Fuel cells are a religious experience. Put in diesel, get out power and water. Wow.

So we are going in these directions. We have made big investments, but it is a design engineering total on-ship cost, a balance.

General HANLON. Sir, we have at our war-fighting lab at Quantico the last couple of years been looking at the so-called hybrid vehicles that you see running up and down I-95 now, the electric with the gas engine. Because as Admiral Cohen was alluding to, one of the biggest logistics issues we have to deal with on the battlefield is always going to be ammo and fuel and water, certainly, but particularly any kind of fluid products and petroleum being one of the significant ones. In fact, as I look through my lessons learned and see the amount of fuel that we had to push through 1 MEF as they went to Baghdad, it is just awesome when you think about it. So anything that we can do to reduce the fuel consumption on the battlefield is very important.

So I have asked the lab not only to look at how we could use the hybrid vehicle, but fuel cells as well, but to actually look at the contractors that are building our current truck. They are looking at how they may come out with a prototype of a diesel electric kind of engine that will help us reduce that consumption on the battlefield.

I have to tell you one other thing, Congressman, that is also an issue besides fuel. It is power in general, you know, batteries. We go through an incredible amount of batteries on the battlefield. Unfortunately right now, we use too many different kinds of batteries on the battlefield. So we are coming up with a way, how can you come up with a single family of batteries, how can you re-charge those batteries from vehicles that you actually have in the field with you, so when your battery goes low, you just plug it in like

you do at home with your cell phone; plug it in and recharge the battery.

These are things we have to do because logistically, sir, it just makes you so much more efficient. But these are great questions, sir, and I will tell you that the labs are looking at all of those.

Mr. TAYLOR. Thank you, sir. Thank you all for sticking around so long.

Mr. BARTLETT. Thank you very much.

Relative to Mr. Taylor's question about fuel dependency, we do have vessels, of course, that you only have to fuel once every 33 years now, is that the frequency of refueling them? My question is, why aren't more of our vessels nuclear? I am not sure when you look at the total life cycle cost, that nuclear is that much more expensive than diesel. I am not sure we have taken an adequate look at that.

As Mr. Taylor mentioned, it isn't just a matter of cost and efficiency. Extended supply lines and our vulnerability because we use a fourth of all of the oil in the world, and we have only one-fiftieth, only two percent of the oil in the world. It makes us, as a country and as a military, very vulnerable.

Gentlemen, in another life, I was a basic researcher and then got involved in R&D. I ended up being awarded 19 military patents. I had a non-military patent before that. I have a growing concern that we are systematically starving basic research and R&D. I know that you have a responsibility to defend the Administration's budget, but the Administration's budgets now for a number of years have really shortchanged basic research and R&D because we did not give you enough money and you needed to modernize and fix leaky roofs and do quality of life things for our military.

What we have been doing is exactly the equivalent of the farmer eating his seed corn. Now, there are not very many farmers dumb enough to eat their seed corn, but that is pretty much what we have been doing for the last number of years. How do we change this? We have got to change it. We are fine now, but what we are doing is assuring that we will not be at the cutting edge for tomorrow's weapons systems because we are not making the adequate investments today in basic research and R&D. You can compare us with any of the industrialized nations of the world, and we fall pretty short, both in the private sector and in our military, from making adequate investments in basic research and R&D.

What are we going to do?

Admiral COHEN. Mr. Chairman, I will take that on. As you know, there is only one Office of Naval Research. The Congress had that vision in 1946. There are not similar organizations in either the Army or the Air Force, and we thank you so much for that vision and that investment. Five years after that, based on the ONR model, Congress established the National Science Foundation. In fact, the first Director of the National Science Foundation came from the Office of Naval Research. The processes between the two and the relationship that we have enjoyed over these many years remains very much the same.

The Navy has a long history of investing and investing wisely in basic research, discovery and invention, the areas which were helpful to your being able to get those important patents. We have

maintained that investment at about \$400 million a year. That is about double what either the Army or the Air Force invests of their monies, not the OSD monies that they have sent down to the services to execute for them. We have gotten some of those OSD monies also.

Navy leadership, and you have expressed this very well, has many demands. Recapitalization, we have been fighting several hot wars in the ongoing global war on terrorism. When you look at the product or the plan after 9-11, it was naval technologies, both Navy and Marine Corps, that were funded at about the 30 percent level by this Administration, even though there were nearly a dozen services and defense agencies that competed to provide some of our bombs and various other technology enhancements to our troops.

So we are doing something right. This year with the fiscal year 2005 budget, as you are aware, the decrease in the investment on the top line of Navy S&T has been arrested. We are now steady and that is shown over by the Future Years Defense Plan. I think in part that is because of the leadership of our Secretary of the Navy, our Commandant and our CNO who have appreciated the output of the S&T as it feeds the R&D.

I can tell you that Secretary Young spends, in my opinion, an inordinate amount of time in this area ensuring that the output side of the S&T greatly enhances a much larger R&D budget. But we are committed, have been and remain committed. It is an ethos just like with the Corps, just like each of the unions within the Navy, we all have our ethos. The ethos of the Office of Naval Research and the Navy in general is a widespread and wise investment in basic research, in academia, in industry, and throughout the country.

Mr. BARTLETT. Thank you. I have known a name from ONR for about half a century, and I don't know if his name is still known there, but Orv Reynolds?

Admiral COHEN. Sure.

Mr. BARTLETT. Do you know the name? I worked with Orv at the National Institutes of Health and at ONR about exactly a half a century ago.

I noted in our classified briefing this morning that ships and submarines were equally susceptible to a few of the threats. The submarines were immune to a great many of the threats. Recognizing that that is true, why aren't we moving more to an underwater Navy than to an above-water Navy? A lot of the threats just go away when they cannot see you. I know that it costs more to go underwater than above, but you need to trade that off against vulnerability, and clearly we are far less vulnerable underwater than we are above. Why aren't we moving more of our assets underwater?

Admiral COHEN. I am sure the war fighters will have thoughts on this, but I would just say technologically if they cannot see you, you cannot see them.

Admiral NATHMAN. Sir, I will give you a pragmatic example. It is just balance. What is the war-fighting balance that you want? We just finished two significant campaigns of supporting Marines, Rangers and Army Special Forces in Afghanistan at ranges of

about 900 miles. One of their demand signals was a persistent distributed tactical force over their head. That is a demand signal. The Navy's answer to that was to put its tactical air force over those troops and their demands.

Mr. BARTLETT. That is the one part of the Navy you cannot go underwater with.

Admiral NATHMAN. That was my point. There is a balance issue here.

Mr. BARTLETT. We need to accept that.

Admiral NATHMAN. Yes, sir. There is a demand signal in Iraq, not only about distributed tactical force. You know, who cares what it was. You want to distribute force because you want the effect now. So, the Navy did it again with Tomahawks and with Navy and Marine Corps aviation over the top of that battle space. That is not to sell aviation, and it is not because they have wings on, but that is an example of the demand signal you are satisfying.

One of the biggest demand signals in Iraq was logistics. Part of the logistical issues that you have is, can you provide the space to close, outfit and move out, the closure to the assault phase to the sustainment phase. That is a clear trend that we have in terms of the persistence of our force. That demand signal is not likely to be solved by the submarine force.

So we believe that one of the things that we see in our campaign analysis is, what are the key gaps and what are areas that submarines are particularly effective in. We think they are particularly effective in the denied access role where their stealthiness and their ability to potentially strongly develop the intelligence preparation of the maritime battles phase before we get there is a key lane for a submarine force. You are seeing us, I believe, both in our intellectual capital and our investment capital, make key decisions to go about and leverage our submarine force in that area. It is going to be complemented with Littoral Combat Ship, definitely. The other side is you have key joint force enabling trends from speed positions sustainment that require a balance in our particular force. That is why you see, I think we are established very clearly, how we see that balance in our budget. You also see it in our intellectual capital about how we want to move down there. So I think we have established the right balance. I also think we, inside that balance, sir, we make clear some affordability decisions about where we want to go. So I believe our investment in the submarine force is about right.

Mr. BARTLETT. I would not argue that we have the right balance for our current potential enemies, but, sir, we have not fought a peer since World War II. One day, we will, and I think that we need to be shaping our Navy in anticipation of a fight with a peer, and then it becomes a very different world.

Mr. Saxton had a question.

Mr. SAXTON. While we are on this topic, could you characterize for us the degree of threat posed by diesel submarines to our national security? Do many nations have diesel submarines? And how do we train against them?

Admiral NATHMAN. I would like to do some broad shaping of that, sir, and then maybe one of my colleagues may add on.

In our war-fighting analysis, the antisubmarine capability is a clear identified gap in terms of what the U.S. Navy sees as ability to close to its battle space and sustain maritime supremacy. So there is asymmetry of a nation building a submarine force, and you see it in certain countries today. They have that capability.

Oh, by the way, to maintain a well trained, well equipped submarine force is quite expensive for any country that chooses to do it, but that is an example of an asymmetric investment and we watch that very carefully. In our intelligence assessment, I think you saw some of that today.

So one of the areas that we organize, that our CNO made us organize around, was our ASW gap. We did it through a brute force task force called Task Force ASW. It came to some conclusions, in some cases validated known areas, but also enlightened us that we could do better. One was that we have a cueing issue about how do you find the submarine force that is out there, and therefore how do you kill it.

So it has really made us focus on cueing. It has made us focus on what is the ability to rapidly kill that submarine force when you see it. Now, to Congressman Bartlett's point, a lot of this will be dependent upon our submarine force being forward to do that, but there are other killers out there, helicopters, Littoral Combat Ships, MMA, that also have the opportunity to rapidly close what I call the OODA loop, the observe, orient, decide and act cycle, that you have to have because we want to treat killing submarines as a prime critical problem. We want to do it rapidly because we do not want to deal with that problem over and over again over a sustained period of time.

It is also pointed to gaps in the self-defense of individual units out there that may be in the same battle space or water mass with threat submarines. We have a self-defense gap there, but we think we are answering that in our anti-torpedo torpedo and ship's self defense systems, things like detection systems which start cueing the individual platform, which is a very important platform to us, either from the people that are on it or the capability of that platform brings, whether it is an aircraft carrier or an amphibious ship or a new destroyer. We need to be very clear and focused on that kind of investment.

So I think we see a very robust response. A lot of that response has been in the intellectual work about how we see it, because otherwise you would be hearing the same old answer out of us. The CNO wants to move a lot faster, and part of that is, let's go back and challenge those assumptions. We look at the rigor, look at the CONOPs.

So inside of that work, now, we have a very rigorous, I believe, approach with the fleet and the current CONOPs, the ability to move to the future CONOPs, which is about closing this kill cycle. How can we do that more rapidly? How do we train to it to make sure the current forces are really good at fleet and theater ASW?

Now, the atrophy of that is somewhat maybe expected. We had that problem in the 1970s and 1980s with the Soviets. That part went away, and our problem became force protection and power project in Iraq, in many different countries, and we tend to focus there. So we recognize that we have atrophied there. We have

stood up and established the fleet ASW command in San Diego. And that replicates what we did with the Strike University that we stood up in Fallon in 1984 after our debacle in Lebanon.

The aviation side recognized that we had not done well in terms of our ability to carry out strike projection. This was after the fact that we stood up a center of excellence around tactical and operational excellence for strike warfare, now called the Naval Strike Warfare Center. We recognized we do not want to replicate this in ASW. Part of that response was to establish a fleet ASW center of excellence that would go challenge our group commanders, our theater commanders, our fleet commanders and then get right down to the tactical training level of different operations. So I think you have seen a very strong institutional response by the United States Navy in that area.

I would add one last comment. We feel that one of the things that is important to us is to align our science and technology around this clear gap. So we have two efforts there. The first one is in our future Navy capabilities. We have targeted future Navy capabilities, enabling capabilities around ASW. What are those enabling capabilities? A lot of it is to the sensors. Do you want to go acoustic, multi-statics? How do you connect the undersea battle space so that you can see it, the commander at the operational level?

And then finally, going back to Admiral Cohen's line, he is the guy that operates to the nation in terms of scientific opportunity that we don't even know is out there, and connect our needs in sort of a broadcast mode to that community, to come back and say, what can we do more quickly. We have been on this cycle now very aggressively for a couple of years. I think we are seeing clear results in that area.

Admiral DAWSON. Sir, if I could just add one thing as an example. You asked about training against diesel submarines. Before I came to this current assignment, I was down at Second Fleet in Norfolk as the Second Fleet Commander. That was a question that was on our minds down there. In fact, over the last several years, we have made arrangements with South American countries to bring their submarines up to the Virginia capes operating areas, their diesel submarines, to train so that our people could train against them. We have also had discussion with the Canadians about bringing their submarines down.

Further, as we look to the future, on to the fleet response plan, we will do more and more training actually forward, and we are making arrangements in the UK to do significant training there against diesel submarines.

Mr. SAXTON. Thank you.

Mr. BARTLETT. Thank you.

You have been very patient, panel. Thank you very much. I would like to ask you one verbal question for the record. Because this is an oversight hearing, we have a number of questions we really need to get answers to. With your promise that you will get those answers to us expeditiously, we will give you those questions in writing for the record. Is that okay? All right.

The verbal question I have is, there are some obvious advantages to being surface. There are some really obvious advantages to being

submerged. But there is kind of a compromise with the semi-submersible, where you have most of the advantages of being submerged and most of the advantages of being surface.

My question for the record is, why aren't we doing more of that? Obviously, you avoid a lot of the surface effects for drag; you now have a much smaller silhouette, so you are going to be more stealthy. So why aren't we doing more of the semi-submersible where we put the biggest part of our vessel underwater, and only that part above water which needs to be there to capitalize on the benefits of being above water?

If you would answer that for the record, I would appreciate it. We will give you a series of questions that because we are an oversight subcommittee, we need answers to. We will give you that for the record.

I want to thank you very much for your patience. Thank you for your testimony. Do you have any additional comments? Okay. Thank you all very much and we stand in adjournment.

[Whereupon, at 12:20 p.m., the subcommittee was adjourned.]

A P P E N D I X

MARCH 11, 2004

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

MARCH 11, 2004

Opening Statement of the Honorable Roscoe Bartlett
Chairman, Subcommittee on Projection Forces

Navy Projection Forces Hearing on Navy Research and Development,
Transformation, and Future Naval Capabilities

March 11, 2004

This morning the Projection Forces subcommittee will receive testimony from Department of the Navy witnesses on the President's fiscal year 2005 budget request for the Navy's projection forces.

Our witnesses include:

The Honorable John J. Young, Jr., Assistant Secretary of the Navy (Research, Development, and Acquisition);
Vice Admiral John B. Nathman, Deputy Chief of Naval Operations for Warfare Requirements and Programs;
Vice Admiral James C. Dawson, Deputy Chief of Naval Operations for Resources, Requirements, and Assessments
Lieutenant General Edward Hanlon Jr., Deputy Commandant for Combat Development and Commanding General of the Marine Corps Combat Development Command; and
Rear Admiral Jay M. Cohen, Chief of Naval Research.

Gentlemen, Welcome!

The subcommittee just completed a classified briefing on the threat to our naval forces, operating throughout the world in support of the global war on terrorism and in defense of U.S. national interests, that establishes a context for our unclassified hearing today.

In this hearing, we will examine the Department of the Navy's research and development programs and support for naval transformation and future naval capabilities. We will hear from our witnesses on Navy and Marine Corps transformation and about those critical research and development programs that support today's Navy and Marine Corps and that will provide new capabilities for tomorrow's Sea Services. We will hear about the role of the Navy's science and technology program and how it provides advanced technologies for insertion in naval systems and for future capabilities for the Navy and the Marine Corps. We will discuss the Navy's program for development of a new family of surface combatants, including the DD(X) advanced multi-mission destroyer and the LCS, Littoral Combat Ship, and for development of other critical and transformational capabilities. And we will hear from our witnesses about the Navy's critical core competencies that are necessary for successful operations in the littoral regions of the world – anti-submarine warfare, mine countermeasures, and ship self-defense.

Today, units of the United States Marine Corps are preparing to deploy and replace some Army units in Iraq. I hope that our witnesses will, at an unclassified level, be able to address some of the measures being taken to prepare our marines and supporting naval forces for operations in Iraq, the littoral of the Arabian Gulf and adjacent waters, and any place else in the world that our naval forces may be deployed.

Our purpose today is to ensure that, for fiscal year 2005 and beyond, the nation continues to provide the Navy and Marine Corps the resources they need to achieve the right balance of force structure and capabilities to meet today's challenges and the new challenges that surely lay ahead. We owe it to our sailors and marines who defend freedom around the world to ensure that they have the ships, planes, combat vehicles, weapons, equipment, training systems, and technologies that will ensure success on any battlefield on which they may fight – at sea, in the air, or on the land.

Secretary Young and Admiral Nathman, Admiral Dawson, Lieutenant General Hanlon and Rear Admiral Cohen, I am very pleased to welcome you to today's hearing. I look forward to your testimony and to the discussion which will follow.

NOT FOR PUBLICATION UNTIL RELEASED BY THE
HOUSE ARMED SERVICES COMMITTEE
PROJECTION FORCES SUBCOMMITTEE

STATEMENT OF

THE HONORABLE JOHN J. YOUNG, JR.
ASSISTANT SECRETARY OF THE NAVY
(RESEARCH, DEVELOPMENT AND ACQUISITION)

AND

VADM JOHN B. NATHMAN
DEPUTY CHIEF OF NAVAL OPERATIONS
WARFARE REQUIREMENTS AND PROGRAMS

AND

VADM JAMES C. DAWSON
DEPUTY CHIEF OF NAVAL OPERATIONS
RESOURCES, REQUIREMENTS AND ASSESSMENTS

AND

LTGEN EDWARD HANLON JR.
DEPUTY COMMANDANT FOR COMBAT DEVELOPMENT

AND

RADM JAY M. COHEN
CHIEF OF NAVAL RESEARCH

BEFORE THE

PROJECTION FORCES SUBCOMMITTEE

OF THE

HOUSE ARMED SERVICES COMMITTEE

ON

FY 2005 NAVY/MARINE CORPS TRANSITION PROGRAMS

MARCH 11, 2004

NOT FOR PUBLICATION UNTIL RELEASED BY THE
HOUSE ARMED SERVICES COMMITTEE
PROJECTION FORCES SUBCOMMITTEE

Mr. Chairman, distinguished members of the Subcommittee, thank you for this opportunity to appear before you to discuss the Department of the Navy's Fiscal Year (FY) 2005 Acquisition and RDT&E programs.

Your Navy and Marine Corps Team's outstanding performance in the Global War on Terrorism (GWOT) and Operations ENDURING FREEDOM (OEF) and IRAQI FREEDOM (OIF) last year underscored the high return on your investment in our combat readiness, our people, and our unique maritime warfighting capabilities. Your return on investment included the lift for 94 percent of the nation's joint warfighting capability. It demonstrated the latest technology in surveillance, command and control and persistent attack operating from sovereign US territory and exploiting the vast maneuver space provided by the sea.

Your Future Navy

The GWOT, OIF and OEF demonstrated the enormous contributions Naval forces make to the effectiveness of joint and coalition forces. We expect some of the challenges faced in OIF to recur and multiply in the coming years. For example, we expect to encounter and have to overcome political and military area denial strategies. Further, military anti-access technologies, such as missiles and weapons of mass destruction, will proliferate and play a greater role than they have in the past.

Analyses of these conflicts indicate that the joint and naval transformational war fighting concepts, capabilities, technologies and procedures we are pursuing in our Naval Power 21 vision are on the right vector. To this end we have embraced a capabilities-based approach to forming the Navy of tomorrow that, with your help, will enable us...

- To achieve greater operational employability,
- To strike persistently with increased speed, reach, and precise lethality from more distributed formations,
- To provide a multi-dimensional defensive shield buttressed by penetrating surveillance around joint forces, allies, and our homeland,
- To exploit our asymmetric advantage to operate jointly from an independent, mobile, sustainable, secure sea base; and,
- To network fully from seabed to space within the distributed Joint Force.

To achieve these goals transformation must embrace more than new systems. Emerging operational concepts, processes and organizations will help transform the capability of America's 21st century naval services in a way that exploits asymmetric maritime advantages to provide unique and complimentary sea based warfighting capabilities to Joint Force Commanders.

Developing Transformational Joint Seabasing Capabilities

The **Naval Power 21** vision defines the capabilities that the 21st Century Navy will deliver. Our overarching transformational operating concept is **Seabasing**; a national capability, for projecting and sustaining naval power and joint forces that assures joint access by leveraging

the operational maneuver of sovereign, distributed, and networked forces operating globally from the sea. Seabasing unites our capabilities for projecting offensive power, defensive power, command and control, mobility and sustainment around the world. It will enable commanders to generate high tempo operational maneuver by making use of the sea as a means of gaining advantage.

Sea Shield is the projection of layered defensive power. It seeks maritime superiority to assure access, and to project defense overland.

Sea Strike is the projection of precise and persistent offensive power. It leverages persistence, precision, stealth, and new force packaging concepts to increase operational tempo and reach. It includes strikes by air, missiles, and by maneuver by Marine Air Ground Task Forces (MAGTF) supported by sea based air and long-range gunfires.

Sea Base is the projection of operational independence. It provides the Joint Force Commander the capability to retain command and control and logistics at mobile, secure locations at sea and enables Expeditionary Maneuver Warfare.

FORCENet is the operational construct and architectural framework for naval warfare in the joint, information age. It integrates warriors, sensors, networks, command and control, platforms and weapons into a networked, distributed combat system.

As a means of accelerating our investment in Naval Power 21, we employ the Naval Capability Development Process (NCDP) and Expeditionary Force Development System (EFDS). The Naval Capability Development Process and EFDS take a concepts-to-capabilities approach to direct investment to achieve future warfighting wholeness. The NCDP takes a sea-based, offensive approach that provides power projection and access with distributed and networked forces featuring unmanned and off board nodes with penetrating surveillance via pervasive sensing and displaying that rapidly deliver precision effects. The EFDS assesses, analyzes and integrates MAGTF warfighting concepts, and requirements in a Naval and joint context to support the overarching operational concept of Joint Seabasing. Both processes are designed to incorporate innovative products of Service and Joint Concept Development and Experimentation (CD&E) and Science and Technology (S&T) efforts.

The FY 2005 budget request reflects the investments that will most improve our warfighting capability by developing and investing in future sea-based and expeditionary capabilities for the Navy and Marine Corps. We will briefly describe innovative concepts that improve our employability then address transformation of our capability pillars by describing some of the key surface and subsurface enablers. We will then highlight the S&T and CD&E developments that ensure continued transformation now and well into the future.

TRANSFORMATION IN OPERATIONAL CONCEPTS

The Navy has begun to experiment with innovative operational concepts that seek to improve the employability of naval forces – both those deployed and those ready to surge. The Global Concept of Operations (**Global CONOPs**) nearly doubles the number of deployable strike groups by ‘repackaging’ existing formations. The Fleet Response Plan (**FRP**) modifies maintenance and training practices for Carrier Strike Groups (CSGs) and increases the

percentage of time that they are employable – whether forward deployed or ready to surge when needed. The Flexible Deployment Concept allows units that have attained high readiness to embark on deployments of varied duration in support of specific national priorities instead of solely in predictable, lock step, 6-month deployments. This new construct leverages the gains attained from FRP to allow for peacetime deployments that provide “presence with a purpose” or specific warfighting assignments, when necessary.

TRANSFORMATION IN CAPABILITIES

SEA SHIELD

ARLEIGH BURKE (DDG 51) Class Destroyer

The FY 2005 Budget request includes \$3.445 billion for the procurement of the final three ARLEIGH BURKE (DDG 51) Class destroyers. These ships are part of a 10 ship, FY 2002 through FY 2005 Multi Year Procurement (MYP) contract awarded in 2002, which finalized the DDG procurement profile and sustains our industry partners until we transition to DD(X) production.

TICONDEROGA (CG 47) Cruiser Modernization Plan

The FY 2005 Budget request includes \$166 million for systems that will add new mission capabilities and extend the combat system service life of the TICONDEROGA (CG 47) Class. The upgrade of these ships will add new, and enhance existing, combat system capabilities to improve compatibility in joint and coalition warfare environments. Furthermore, these improvements will upgrade the quality of life for our Sailors and lower the operating costs for those ships.

Littoral Combat Ship (LCS)

The LCS will be a networked, agile, mission focused, stealthy surface combatant with capabilities optimized for responsiveness to threats in the littorals. LCS will utilize core onboard sensors and weapons combined with reconfigurable mission packages employing manned and unmanned vehicles and modular sensors and weapons to execute assigned tasks and operate as a node in a network centric battle force. Primary missions for the ship will include littoral Mine Warfare, littoral Surface Warfare and littoral Anti Submarine Warfare to ensure access of friendly forces in littoral regions. The LCS program awarded contracts to three industry teams in July 2003. The FY 2005 Budget request includes \$352 million of RDT&E funding for LCS platform and mission system development and initial ship procurement. The LCS spiral development acquisition strategy will support construction of multiple flights of focused mission ships and mission packages with progressive capability improvements. Flight 0 is comprised of four ships, with the first ship requested for authorization in FY 2005 using RDT&E, N funds with detail design and construction commencing in FY 2005. Mission modules will deliver in support of the Flight 0 seaframe delivery in FY 2007. Flight 0 will develop and demonstrate several new approaches to Naval warfare including suitability of large-scale modular mission technologies and new operational concepts in the littoral. The industry teams submitted their proposals for final system design and detail design and construction phase in January 2004. The

down select to one or two teams for final system design and detail design and construction of Flight 0 is anticipated in late Spring 2004.

VIRGINIA (SSN 774) Class Attack Submarines

With current construction progressing on schedule, the FY 2005 Budget request includes \$2.5 billion for the seventh ship, advance procurement for the eighth and ninth ships of the VIRGINIA Class, and Economic Order Quantity (EOQ) material procurement for the eighth, ninth, and tenth VIRGINIA Class submarines. There are a total of ten VIRGINIA Class submarines under contract. This year's ship will be the second ship in the five-ship MYP. This MYP contracting approach provides the Navy savings of \$80M per ship for a total savings of \$400M compared to "block buy" procurement. These ships will continue to be built under the teaming approach adopted by Congress in 1998, which maintains two capable nuclear submarine shipbuilders. In accordance with FY 2004 Congressional direction, procurement of two VIRGINIA Class submarines per year is delayed until FY 2009.

Submarine Technology Development and Insertion

This program is comprised of Advanced Submarine System Development (ASSD) and VIRGINIA Class Technology Insertion RDT&E and SCN funding lines. ASSD develops and demonstrates the most promising submarine transformational technologies for rapid incorporation into fleet units, including combat systems, payloads and sensors. Its focus is SEA TRIAL and the three warfighting pillars of SEA POWER 21, including capabilities to gain and sustain battle force access, develop and share knowledge, deter conflict, counter weapons of mass destruction and project power with surprise.

Cobra Judy

The Navy successfully contracted with industry to develop and build a replacement for the aging Cobra Judy surveillance platform. Working in partnership with industry and leveraging Missile Defense Agency investments in radar technology, the Navy developed an innovative strategy which accelerated the acquisition of this essential capability while also creating the possibility to leverage the Cobra Judy program to create a competition for the radar for the Navy's future cruiser, CG(X).

Missile Defense

A viable Regional and Terminal sea based ballistic missile defense system is important to ensure the safety of U.S. forces and the flow of U.S. forces through foreign ports and air fields when required. Sea based missile defense can also allow us to assist allies and friends deterring coercion and threats. Aegis Ballistic Missile Defense (ABMD) continues its development and testing and will support Initial Defensive Operations beginning in September 2004, with surveillance and track capability in the Command and Control, Battle Management and Communications (C2BMC) and regional missile defense engagement capability in FY 2005. Since November 2002, ABMD had two of three successful intercepts in Flight Mission 4 and Flight Mission 6. The Navy has commenced a process to determine the best long-term solution to meet its sea based terminal requirements.

MDA has approached the Navy to begin a feasibility study to examine intermediate and long-term options for providing a sea based boost phase kinetic energy interceptor.

Advanced Deployable System (ADS)

The ADS utilizes an off board distributed sensor field to detect submarines. Plans are to deploy ADS from LCS as a component of the LCS Littoral Anti Submarine Warfare capability. Current efforts focus on testing ADS array performance and preparation for at-sea testing of LCS deployment and data transmission concepts.

Organic Airborne Mine Countermeasures

The FY 2005 Budget requests funding for a variety of airborne mine countermeasure systems that will be employed by the MH-60S helicopter as an organic capability within the Navy's strike groups. Specific systems are:

- AN/AQS-20A Advanced Mine Hunting Sonar and the Airborne Mine Neutralization System (AMNS) are being developed to counter deeper moored mines and visible bottom mines. The Navy is requesting \$4.8 million for the AN/AQS-20A to complete system developmental testing, initiate and complete operational testing and award a contract for six AN/AQS-20A systems. The budget request also includes \$15.6M for AMNS to conduct contractor testing, complete system developmental testing and reach Milestone C.
- The AN/AES-1 Airborne Laser Mine Detection System (ALMDS) and the AN/AWS-2 Rapid Airborne Mine Clearance System (RAMICS) are being developed to counter near surface and floating mines. The Navy is requesting \$3.5 million to complete operational testing and \$21.4 million for four ALMDS LRIP units. The Navy also requests \$14.1 million to complete contractor testing and commencement of developmental testing of RAMICS.
- The Organic Airborne and Surface Influence Sweep (OASIS) will counter influence mines that may not be found using other mine hunting systems. The Navy is requesting \$11.2 million for delivery of three Engineering Development Models (EDM) and the completion of development testing.

Additionally, I have established a Mine Countermeasures Executive Committee comprised of senior Navy leadership. They meet at least semiannually to ensure a focused effort in Acquisition and Technology Development is maintained to enable the concepts of Sea Shield and Sea Strike as part of Sea Power 21 and Marine Corps Strategy 21, but also to provide assured access in the 21st Century for our Joint Forces.

Long-term Mine Reconnaissance System (LMRS)

Consistent with the Navy's current Unmanned Undersea Vehicle (UUV) Master Plan, development of the LMRS-- a fully autonomous, UUV utilizing high performance sonar to investigate potentially mined waters continues. The follow-on effort to develop a Mission Reconfigurable Unmanned Undersea Vehicle (MRUUV) will maximize commonality between

the two systems. A formal review is underway to update the UUV Master Plan to reflect changes in priorities, requirements, and emerging technologies.

Remote Mine hunting System (RMS)

The RMS is being developed as an unmanned semi-submersible vehicle to deploy from surface combatants and operate remotely over-the-horizon. This provides a new capability for organic mine hunting. Current efforts focus on qualification testing for the system into the DDG-51 Flight IIA ships (Hulls 91 through 96) and technical evaluation. We are also exploring the multi-mission potential of the RMS as one of the systems for our LCS mine countermeasures mission module development.

Standard Missile

The FY 2005 President's Budget requests \$49.2M for Standard Missile upgrades. The Extended Range Active Missile (ERAM), tentatively designated SM-6, will add an extended range, overland cruise missile defense capability. The Navy's recommended strategy, based on a market analysis, is to pursue a sole-source acquisition through Raytheon Missile Systems. This low-risk approach relying on Non-Developmental Items will support an FY 2010 IOC. This approach will utilize the existing production active seeker from AMRAAM Phase III, utilize the existing production airframe from the Standard Missile-2 Block IV, leverage multi-service investments in future technology growth path, and leverage existing production infrastructures and workforces.

Self Defense Test Ship (SDTS)

The SDTS is a ship that can be unmanned and remotely operated for intercept testing inside safety limitations that prevent testing against manned civilian or Fleet assets. The SDTS provides combat testing in an at-sea environment on a ship against representative targets. Since becoming operational in October 1994, the ex-USS DECATUR has tested systems such as Rolling Airframe Missile (RAM) Block 1, Close-In Weapon System (CIWS) Block 1A and 1B, Ship Self Defense System (SSDS), NATO SEASPARROW Missile System, and the Evolved Sea Sparrow Missile (ESSM). The savings of commissioned warship time and manpower has been substantial. Recently, the DECATUR has been replaced by the ex-USS PAUL F. FOSTER. The FOSTER is currently being converted to a test ship and will be operational in FY 2005. The FY 2005 President's Budget requests \$11.0M to support the SDTS and continue testing aboard.

Ship Self-Defense System (SSDS)

The FY 2005 President's Budget requests \$45.2M to continue SSDS development. The SSDS is designed to expedite the detect-through-engage process on amphibious ships and aircraft carriers against anti-ship cruise missiles (ASCMs). SSDS consists of software and commercial off-the-shelf hardware and is intended to integrate sensor systems with engagement systems. Activity during FY 2003 focused on further definition of the overall Mk2 test and evaluation program, work on a Test and Evaluation Master Plan (TEMP) for Mk 2, and engineering and development testing of the Mod 1 version at the Ship Combat Systems Center, Wallops Island, VA and on board USS REAGAN.

Rolling Airframe Missile (RAM)

The RAM program provides surface ships with a low-cost, lightweight, self-defense system to defeat anti-ship cruise missiles (ASCMs). The United States and the Federal Republic of Germany jointly developed and support RAM. Combined Developmental Test/Operational Test (DT/OT) started in June 2003, and extended into FY 2004, using the existing SDTS to ensure operationally realistic tests for determining that RAM with the new Helicopter-Air-Surface (HAS) software retained capability against ASCMs and to carry out follow-on testing from the FY 1999 operational evaluation. The FY 2005 President's Budget requests \$47.4M to procure 90 Block 1 missiles.

Evolved Sea Sparrow Missile (ESSM)

The ESSM is a kinematic upgrade to the RIM-7 Sea Sparrow missile which provides self protection for surface ships against current and future Anti-Ship Cruise Missile (ASCM) threats. It was developed to balance total system effectiveness against the low-altitude and supersonic ASCM threat. ESSM is an international cooperative development and production effort that includes 12 participating governments. OPEVAL was successfully completed April 2003 in USS SHOUP, an Aegis equipped destroyer. All of the testing was conducted at the Naval Air Warfare Center Weapons Division sea range at Point Mugu, CA. COMOPTEVFOR has assessed ESSM as operationally suitable and effective against representative ASCM threats and recommended ESSM for fleet introduction. The ESSM program was approved for full rate production in January 2004. The FY 2005 President's Budget requested \$80.3M, which supports the Full Rate Production contract award of 71 missiles.

SEA STRIKE

DD(X) Destroyer

The FY 2005 Budget request includes \$1,432 million in RDT&E funds for DD(X) with \$221 million for lead ship detail design and construction. The Navy is two years into the competitively awarded DD(X) design and technology development effort. The winning contractor has organized a National Team of industry experts to achieve the most innovative and cost-effective solutions for development of the DD(X) through spiral development of technologies and engineering, with promising systems being employed on existing platforms and other future ship classes. DD(X) will dramatically improve naval surface fire support capabilities available for MAGTF, joint and coalition forces. Planned technologies, such as integrated power system and total ship computing environment in an open architecture, will provide more affordable future ship classes in terms of both construction and operation. In a noteworthy partnership with industry, the Navy shifted the DD(X) volume search radar to S-band, providing increased capability and the future potential to support missile defense operations.

SSGN

The FY 2005 Budget requests \$517 million of procurement funding for the conversion of the third OHIO Class submarine, and the Engineered Refueling Overhaul of the fourth and final submarine to be converted to SSGN. When completed, these submarines will provide transformational warfighting capability carrying up to 154 Tomahawk cruise missiles and support

deployed special operating forces. The four SSGN conversions will be executed utilizing a public-private partnership conducting the work in Naval Shipyards, and are scheduled for delivery in FY 2007.

Tactical Tomahawk

The FY 2005 Budget requests \$256.2M for 293 missiles, an increase of \$64 million and 75 missiles over the amount projected for FY 2005 in the FY 2004 budget. Tactical Tomahawk represents a tremendous improvement over the successful Block III Tomahawk cruise missile. The state-of-the-art components allow reduced response time, multiple pre-planned outcomes, and improved lethality and navigation improvements through innovations in manufacturing and production techniques. We have committed to replenish our precision-guided munitions inventories and we will utilize a multi-year acquisition strategy to maximize the quantity of Tomahawk missiles procured. The Full Rate Production decision is on track for June 2004. Additionally, we are in the final stages of our second remanufacture program; converting all available older Tomahawk airframes to the latest Block III configuration. This effort will be complete in May of this year and will yield an additional 456 missiles.

Expeditionary Fighting Vehicle (EFV)

The EFV will join the MV-22 and the LCAC as an integral component of the amphibious triad required for executing Expeditionary Maneuver Warfare. The EFV remains the Marine Corps' number one ground acquisition priority. The Department intends to procure 1,013 vehicles with IOC planned for FY 2008. The EFV is currently proceeding in the System Development and Demonstration (SDD) phase with nine second-generation prototypes being assembled. Additionally, developmental testing continues on earlier produced program definition and risk reduction prototypes as well as the SDD vehicles. The FY 2005 RDT&E Budget requests \$236.9 million for a robust developmental test program for the nine vehicles.

Lightweight LW-155 Howitzer (M 777)

The M 777 is a Joint USMC/Army 155mm towed artillery system that will replace the current M198. The Marine Corps intends to procure a total of 380 howitzers with IOC in FY 2005. The M 777 is currently in its second year of Low Rate Initial Production for the Marine Corps and the FY 2005 budget request includes \$175.4 million to procure 97 guns, while the Army's budget request includes \$37 million for its initial 18 production guns. The FY 2005 Budget request includes a request for MYP authority.

Medium Tactical Vehicle Replacement (MTVR)

The seven-ton class MTVR offers a dramatic increase in both on- and off-road payload capacity. The Marine Corps intends to procure 6,393 trucks with full rate production ongoing. Dump and wrecker variants will be bought out in full rate production through 2005. The Seabees will also buy a fleet of MTVR variants through an innovative use of the Marine Corps' existing contract.

SEA BASE

CVN 21 Class

The CVN 21 program is designing the aircraft carrier for the 21st Century, as the replacement for the NIMITZ Class nuclear aircraft carriers. CVN 21 will be the centerpiece of tomorrow's Carrier Strike Groups and a contribution to every capability pillar envisioned in Sea Power 21. CVN 21 will be a primary force in Sea Strike with enhancements such as a future air wing that will include the Joint Strike Fighter and Joint Unmanned Combat Air Systems. CVN 21's transformational command centers will combine the power of FORCEnet and flexible open system architecture to support multiple simultaneous missions, including integrated strike planning, joint/coalition operations and Special Warfare missions. The CVN 21 based strike group will play a major role in Sea Shield protecting United States interests, while deterring enemies and reassuring allies. CVN 21 will provide the United States the capability to quickly project combat power anywhere in the world, independent of land based support.

Overall, CVN 21 will increase sortie generation rate by 20 percent, increase survivability to better handle future threats and have depot maintenance requirements that could support an increase of up to 25 percent in operational availability. The new design nuclear propulsion plant and improved electric plant together provide three times the electrical generation capacity of a NIMITZ Class carrier. This capacity allows the introduction of new systems such as Electromagnetic Aircraft Launching System, Advanced Arresting Gear, and a new integrated warfare system that will leverage advances in open systems architecture to be affordably upgraded. Other features include an enhanced flight deck, improved weapons handling and aircraft servicing efficiency, and a flexible island arrangement allowing for future technology insertion. The FY 2005 Budget request includes \$626 million for continued development of CVN 21. The Construction Preparation Contract, planned for 3rd quarter FY 2004, will be for design, advance planning, advance construction, non-nuclear advance procurement, and continuation of research studies to further reduce CVN 21 manpower requirements and total ownership costs. The construction contract is scheduled for award in 1st quarter FY 2007, with ship delivery in 2014. The program is currently working toward a Milestone B review in 3rd quarter FY 2004.

NIMITZ Class

Refueling and Complex Overhauls (RCOH) provide a bridge between maintaining current readiness requirements and preparing the platform for future readiness initiatives in support of Sea Power 21 by leveraging developing technologies from other programs and platforms that support RCOH planning and production schedules for advantageous insertion during this major recapitalization effort.

The Navy negotiated a modification to the RCOH contract for USS DWIGHT D. EISENHOWER (CVN 69) in December 2003. The renegotiated contract provides incentives for Northrop Grumman Newport News (NGNN) and the Navy team to work together to manage the completion of this complex availability. The Navy and NGNN created a better incentive contract structure to contain cost risk and maintain schedule. It is expected that this improved acquisition

model will be used in future contracts for aircraft carrier construction and overhaul. USS DWIGHT D. EISENHOWER overhaul is scheduled to complete by November 2004.

The USS CARL VINSON (CVN 70) RCOH start was delayed one year to November 2005. USS CARL VINSON will remain available for operations until Summer 2005. This added availability enables the Navy to maintain a flexible defense posture and, at the same time, bring increased capability to project credible, persistent Naval combat power globally. Other advantages for the move included maintaining a balanced and stabilized industrial base for Navy ship maintenance in both public and private yards and providing additional near-term funding for ongoing recapitalization efforts. The FY 2005 Budget request includes \$333 million in advance procurement funding for the USS CARL VINSON overhaul.

Lastly, the Navy commissioned USS RONALD REAGAN (CVN 76) in July 2003, and laid the keel for GEORGE H. W. BUSH (CVN 77) in September 2003.

MPF(F)

Most prominent in highlighting the value and power of the nation's naval expeditionary capability was the Marine Corps' participation in OIF. Success in this operation was due to our naval dominance, our expeditionary nature, and our flexibility and adaptability to defeat the challenges posed by enemy threats. Among other naval assets, eleven strategically located Maritime Prepositioning Force (MPF) ships were unloaded in 16 days to provide the equipment and sustainment required for two Marine Expeditionary Brigades. Exploiting the operational speed, reach, and inherent flexibility of sea power, the Navy-Marine Corps team achieved a rapid buildup of sustained warfighting power that was combat ready to support US Central Command.

We continue to revolutionize this invaluable capability. We are currently in the process of analyzing potential platform replacements. The Analysis of Alternatives for MPF(F) is complete. Current guidance requires MPF(F) to provide the combatant commander highly flexible operational and logistics support for missions projecting power ashore from a sea base, or during independent operations. Unlike current pre-positioning ships, MPF(F) will greatly improve our forces' flexibility by allowing sea based assembly, projection and sustainment operations that are fully interoperable with amphibious ships and other Naval and joint forces. MPF(F) represents the link between forward deployed forces and their reach-back bases both in CONUS and overseas, and will be a crucial element to Enhanced Networked Seabasing both for Naval and joint forces. Unlike any other prepositioning ship, the MPF(F) will not be reliant on a port facility, greatly reducing our dependence on international support. The ability to rapidly close, employ, and sustain a large force dramatically increase the flexibility and utility of the seabased force and present the Combatant Commander with more response options than ever before. A formal report of the results is expected in Spring 2004.

Landing Craft Air Cushion (LCAC)

Our fleet LCACs saw dramatically increased operational tempo supporting worldwide operations during the past year, underscoring the need for the LCAC Service Life Extension Program (SLEP). The program, designed to extend the service life of LCACs to 30 years, had several notable accomplishments during the past year: LCAC 25 delivered on time in November 2003, and LCAC 2 delivered on time in February 2004. We awarded a contract to Textron

Marine and Land Systems New Orleans for the FY 2002 and 2003 SLEPs (six craft total) in December 2002 and all craft are currently on schedule. The award of the FY 2004 contract for four craft is anticipated in the second quarter of FY 2004. The FY 2005 Budget request includes \$90 million for SLEP of five craft. We are continuing with our revised acquisition strategy to refurbish vice replace the buoyancy boxes and will competitively select the FY 2005 SLEP work. The revised acquisition strategy will deliver the required LCAC capability and service life while providing a cost savings of \$104 million through the FYDP for the program.

LPD 17

The SAN ANTONIO (LPD 17) Class of amphibious transport dock ships represents a critical element of the Navy and Marine Corps future in expeditionary warfare. The FY 2005 Budget request includes \$966 million to fully fund the construction of the seventh ship. Four additional LPD 17s are included in the Future Years Defense Program (FYDP), with the final ship of the 12-ship Class planned beyond the FYDP. The FY 2005 Budget request reflects rephasing of one ship from FY 2006 to FY 2005 that will result in a more efficient workload profile as well as a total FYDP savings of approximately \$40M. Lead ship detail design is complete, lead ship fabrication is approximately 85% complete, and the lead ship was launched and christened in July 2003. Current efforts are focused on managing schedule and cost. LPD 18 construction began in February 2002. LPD 19/20 construction commenced in July 2001 and October 2002, respectively. We awarded the contract for LPD 21 in November 2003, named NEW YORK to honor the victims of the World Trade Center attack, and plan to award the contract for LPD 22 in 3Q FY 2004.

LHD 8

In accordance with Congressional direction to incrementally fund LHD 8, the FY 2005 Budget requests \$236M for continued construction. LHD 8 will be the first big deck amphibious ship that will be powered by gas turbine propulsion, and all of its auxiliary systems will rely on electrical power rather than steam. This change is expected to realize significant lifecycle cost savings. The ship, recently named MAKIN ISLAND, had its keel laying ceremony on February 14, 2004.

LHA(R)

The FY 2005 Budget requests \$44.2 million in R&D for LHA(R). LHA(R) concept designs are being evaluated within the context of Joint Seabasing and power projection. Lessons from Iraq and Afghanistan suggest we should maximize the air capability of this ship while leveraging the design requirements made to LHD-8. These lessons are consistent with efforts over the past year on Joint Forcible Entry Operations capabilities and will be part of future joint sea basing efforts. This ship will be the centerpiece of the Expeditionary Strike Group, a contributor to the Expeditionary Strike Force, and will carry expeditionary warfare through the middle of this century. The ship will leverage the future Sea Based environment and greatly enhance command and control capabilities and at sea training for embarked forces. The resulting design is planned to provide a transformational capability that is interoperable with future amphibious and Maritime Prepositioning Force ships, high-speed vessels, and advanced

rotorcraft like the MV-22 and CH-53X, and the Joint Strike Fighter. This funding supports design development leading to a planned ship construction award in FY 2008.

Auxiliary Dry Cargo Ammunition Ship (T-AKE)

The FY 2005 Budget request includes \$768 million for the seventh and eighth ships. The first four ships have been authorized and appropriated and are under contract with NASSCO for construction. Exercise of the option for the fifth and sixth ships occurred in January 2004. Lead ship construction commenced in September 2003, with a projected delivery date of October 2005. The second ship is projected to deliver in FY 2006, while the third and fourth ship deliveries are projected for FY 2007.

FORCEnet

Surface Combatant Combat System Open Architecture (OA)

The FY 2005 President's Budget request includes \$146.5M for Surface Combatant Combat System Open Architecture. The OA effort is an enterprise wide initiative to reduce cost and increase interoperability. Today's Fleet computing architectures are performance limited and expensive to upgrade, and cannot support emerging Sea Power 21 requirements. Implementation of modular warfighting software functions, built once and used in multiple systems, using standards based solutions, will enable common, interoperable capabilities to be fielded faster at reduced cost. This approach is a fundamental enabler in achieving the precepts behind FORCEnet capability and are the key to affordable 21st Century Joint combat capability

Cooperative Engagement Capability (CEC)

The FY 2005 President's Budget requests \$103.5M for continued development of the Navy's Cooperative Engagement Capability. CEC provides a significant step forward in transforming our situational awareness of the battlespace. CEC's successful completion of OPEVAL allows implementation of this capability within the fleet and is a major step in developing a network-centric force. The CEC program is being restructured to achieve alignment with the Navy's OA plans as well as to meet forthcoming requirements from the Joint Single Integrated Air Picture Systems Engineering Organization (JSSEO). It is anticipated that a revised acquisition strategy for this will be approved mid-year. Considering this, the prospective offerors to the CEC Block 2 competition have been notified that this specific competition will not occur, but that future related competitive opportunities will be announced once the new strategy is approved. Future plans include the development of a single-track management solution set for Navy systems that are compliant with the joint architecture provided by JSSEO to all the Services. This will maximize the potential for Joint interoperability across the battlespace.

Distributed Common Ground System – Navy (DCGS-N)

A further step forward in network-centric warfare and one of the Navy's transformational initiatives is DCGS-N. In January 2004, the Navy combined the Joint Service Imagery Processing System – Navy with the Joint Fires Network into DCGS-N. These programs were combined organizationally, programmatically, and technically. In FY 2005, the President's

Budget request includes \$12.2 million for continued DCGS-N development. This capability merges ISR, targeting, and command and control systems into a coherent architecture to improve situational awareness, fires, and time-sensitive targeting. It serves as a building block for the Navy's more extensive FORCEnet concept.

TRANSITIONING SCIENCE AND TECHNOLOGY TO ENABLE TRANSFORMATION

The Department of the Navy (DON) must continually examine and question how we operate in various strategic environments and what the future might entail; in essence, creating an organizational culture in which transformation can thrive. Joint Concept Development and Experimentation (CD&E) and Science and Technology (S&T) are the primary focusing mechanisms that we use to innovate.

Identifying and developing future capabilities for Naval forces will require robust experimentation involving systems, platforms, organizations, and tactics. The Sea Trial and Marine experimentation elements of our Naval Power 21 strategy give the Fleet a strong voice in evaluating the potential of new technologies and warfighting concepts. Extensive use of simulations, modeling, joint test facilities, and actual forces is necessary to maintain our technical advantage and continual command of the seas.

Technology will never substitute for presence; rather it should always address a mission requirement of making Naval Forces more effective. Our S&T portfolio is focused on providing the best scientific research and technology in the shortest time to maximize the benefit to our Sailors and Marines. Twenty-first century technology offers enormous opportunities to enhance our warfighting abilities. Emerging technologies must be embraced, both to mitigate risk and to take advantage of new possibilities. We plan to do so. We are committed to seizing these opportunities at a reasonable cost, although doing so requires efficient organizational alignment, resolution of difficult interoperability and integration problems, systematic innovation using improved business practices, and the steady pursuit of promising scientific and technological initiatives. The Open Architecture initiative is one example of an integration plan that will provide a solid foundation to rapidly field cost effective solutions to the war fighter's needs. Other initiatives are:

Electric Power for Ships

The DON will fund development and at-sea demonstrations of: innovative super conducting and permanent magnet motor technologies for podded propulsors; advanced prime power, including high speed super conducting generators and fuel cells; and electrical auxiliaries such as EMALS for CVN 21. We are also continuing development of the Electromagnetic Rail Gun, which has great potential for future electric ships.

X-craft

The Navy and Marine Corps will continue to research advanced hull forms, cutting edge propulsion, and material and modular payload technologies for use in projecting joint capabilities from sea bases. Demonstration efforts are underway on several different vessels, predominantly catamaran designs. The X-craft is under construction and planned for delivery in the fall of

2004. The DON will use this work and look at additional hull designs in order to support our future decisions on LCS and High Speed Connectors (HSC).

Autonomous Vehicles

The use of the High Speed Vessel X1 (JOINT VENTURE), Navy patrol craft and six unmanned, autonomous underwater vehicles (AUV) directly from our science and technology (S&T) program for special and mine clearance operations in the Iraqi littoral gave us important insights into our both future littoral and mine warfare concepts and capabilities. The DON will enhance unmanned vehicle development through intelligent navigators, remote docking stations, and collaborative behavior research.

Revolution in Training

In addition, the Department will develop compact, reconfigurable, and deployable training systems to significantly improve the effectiveness of simulation-based training and command and control architecture.

OPERATION RESPONSE

In support of the I Marine Expeditionary Force's (I MEF) return to Iraq scheduled to begin March 2004, and in support of deployed Marines in Afghanistan, the Secretary of the Navy directed the establishment of a formalized process and action team, "OPERATION RESPONSE", to rapidly respond to technological and materiel requirements generated from deployed Marines. A senior Navy-Marine Corps team co-chaired by the Assistant Secretary of the Navy (Research, Development and Acquisition) and the Deputy Commandant for Combat Development will review and coordinate technical and materiel requirements for deployed units and utilize the technical and engineering expertise throughout the Department of the Navy and industry to expedite the best solutions available to counter rapidly evolving threats. This process will leverage and expand the current roles and capabilities of our established requirements generation and materiel development and acquisition commands in order to better respond to innovative enemy threats.

Counter Improvised Explosive Devices (IED) Technology

As the lead DoD executive agent for counter IED technology and training requirements, we have taken the initiative to fund several promising counter-IED technologies/efforts in support of I MEF's deployment back into Iraq; Commander, Joint Task Force (CJTF) SEVEN operations, and CJTF-180 operations in Afghanistan. In February 2004, the Navy reprogrammed \$6.3 million to enable Navy Explosive Ordnance Disposal and exploitation teams to continue forward-deployed coalition and CONUS-based joint operations to counter IEDs. An additional \$7.8 million was reprogrammed to deploy and support a promising classified counter-IED system. A single system is planned for a June 2004 deployment to be utilized by the Marine Corps.

Vehicle Hardening/Armor initiatives

Responding to I MEF's request for material solutions to ballistic protection for both personnel and vehicles against Improvised Explosive Devices, Rocket-Propelled Grenades, mines and small arms, the Marine Corps is buying a mix of interim and long-term armor solutions to better protect our Marines and Sailors. We are procuring steel armor, blast resistant glass, and ballistic blankets for HMMWV's and other tactical vehicles. The Seabees are investigating various armor solutions for their fleet of construction equipment, and buying the Marine Corps kits to harden their Medium Tactical Vehicle.

The Office of Naval Research (ONR) and the Marine Corps Warfighting Laboratory have also partnered to rapidly test an explosive resistant coating (ERC), which may provide promising ballistic protection when applied to vehicles. Testing and analysis is currently underway and the OSD Technical Support Working Group is in the process of expanding the testing with ONR. Initial testing of the ERC has demonstrated that some level of protection can be attained when the coating is applied and can possibly be installed in the field. Further testing is needed, but the Department of the Navy is committed to fully exploring this option.

Intelligence, Surveillance, and Reconnaissance (ISR)

The Marine Corps will be rapidly fielding a number of systems to provide enhanced ISR capabilities in the theater of operations. These systems include Unmanned Aerial Vehicles (UAVs), such as Dragon Eye and an ONR developed vehicle, Silver Fox. A recent demonstration of the Scan Eagle UAV went very well and I MEF is preparing an Urgent Needs Statement for the system. The Marines also plan to employ aerostat balloons and possibly smaller, Army Rapid Equipping Force-derived platforms to provide persistent ISR coverage.

Aircraft Survivability Equipment (ASE)

The Navy and Marine Corps aviation has partnered with industry to expedite the application of ASE on the Marine Corps rotary and fixed wing aircraft deploying to the CENTCOM area as part of the MEF's Aviation Combat Element (ACE). Rotary wing aircraft will have the requisite ASE installed by industry teams prior to their departure, enroute on ships, upon arrival in-theater, or shortly after their arrival in-theater. KC-130 aircraft, which were not planned to receive ASE upgrades, will now receive some ASE upgrades initially shortly after they arrive in-theater and additional design work is being completed for full upgrades to be applied while in-theater.

SUMMARY

Our Naval forces are unique in their contribution to the Nation's defense. Versatile Naval expeditionary forces are frequently the nation's first responders, relied upon to establish the tempo of action, control the early phases of hostilities, and set conditions for decisive resolution. America's ability to protect its homeland, assure our friends and allies, deter potential adversaries, and project decisive combat power depends on maritime superiority. The transformation of Naval forces is dedicated to greatly expanding the sovereign options available worldwide to the President across the full spectrum of warfare by exploiting one of our Nation's asymmetric advantages – control of the sea. The transformation of our Naval forces through

innovative operational concepts and the application of appropriate technologies leverages enduring capabilities for projecting sustainable, immediately employable joint combat power by facilitating the accelerated deployment and flexible employment of additional joint capabilities through a family of systems and assets afloat. Our FY 2005 Budget request seeks to accelerate our investment in Naval Power 21 to transform our force and its ability to operate as a fully interoperable and interdependent component of the joint war fighting team. Congressional support of this plan is central to achieving this vision – I thank you for your consideration.

**QUESTIONS AND ANSWERS SUBMITTED FOR THE
RECORD**

MARCH 11, 2004

QUESTIONS SUBMITTED BY MR. BARTLETT

Mr. BARTLETT. At an unclassified level, what were the major findings of the Navy's Task Force Alfa on the status of the Navy's anti-submarine warfare programs? What measures are being considered to address these findings? Does the program meet the Navy's long-term requirements for maintenance of the Navy's ASW core competency?

Admiral NATHMAN. Task Force Anti-Submarine Warfare (TF ASW) was established by the CNO in February 2003 to explore technology and concept of operations to ensure the U.S. maintains complete ASW dominance, even in the challenging littorals. TF ASW reaffirmed the ASW capability gaps identified by previous OPNAV and fleet analysis. The most important capability shortfalls identified include the ability to detect threat submarines (via cueing and large area search systems), track and engage quiet diesel-electric submarines and the ability to provide ship self protection of forces in support of the Sea Base.

To improve detection capabilities, the Navy is developing the Advanced Deployable System (ADS), which will provide real time acoustic surveillance of the littoral battlespace, acquiring automatic radar periscope detection and discrimination systems to improve the detection capabilities of ASW aircraft, and increasing the planned quantity of Marine Patrol and Reconnaissance Aircraft (MPRA) capable of employing the active source-based Improved Extended Echo Ranging (IEER) large area search system. Additionally, the MPRA follow on aircraft, Multi-Mission Aircraft (MMA), is being developed and will have enhanced ASW capability. MMA will deliver initial operational capability to the fleet in fiscal year 2013. Spiral development of sensors and advanced processor builds hosted on open architecture systems will improve the capability of all detection systems and reduce the costs of future improvements to counter increasing threat capabilities.

Forward presence capabilities will be greatly enhanced by the addition of the VIRGINIA Class attack submarine to the undersea battleforce in the 2005 timeframe. In addition to significant improvements to platform survivability, VIRGINIA's ASW area clearance and attack capabilities will provide the capability for all Naval projection forces to operate securely in the enemy's littoral seas. The MK48 Mod 7 ADCAP Heavyweight Torpedo is scheduled to be available in 2006. Combined with the overall ASW system performance of the VIRGINIA, the MK48 Mod 7 will provide improved shallow water ASW attack capability. This capability will allow the effective neutralization of threat submarines in a wider range of tactical and operational conditions, such as bottomed threat submarines in difficult shallow water acoustic conditions. The Littoral Combat Ship ASW mission module will deliver ASW capabilities for forward presence operations. LCS will be networked with all other ASW-capable forces and able to conduct prosecutions of enemy submarines and small boat threats. The MH-60R helicopter with the new MK-54 lightweight torpedo will provide the primary ASW engagement capability for LCS.

The Navy has embarked on a torpedo defense system development and acquisition program. The Surface Ship Torpedo Defense (SSTD) program, the AN/WSQ-11 TRIPWIRE system, will provide torpedo "hard kill" capability in the form of an anti-torpedo torpedo for the majority of the fleet. To ensure that our forces have the best available self-defense as it is developed, the Navy is continuing an aggressive upgrade and deployment program to the existing SSTD standard fit, the AN/SLQ-25A NIXIE (acoustic decoy employed as an active counter-measure to deceive inbound torpedoes).

Beyond these improvements, ASW science and technology development under the Chief of Naval Research's Future Naval Capabilities Program continues. Development and transition of ASW projects will result in both new systems as well as further improvements to some legacy systems. This will in turn, further improve the Navy's ability to operate in the difficult littoral environment.

TF ASW recommended establishing a fleet-wide, operational, integrated ASW training command, Fleet ASW Command (FASWC), to focus on integrating advanced networks and sensors, new operating concepts, Fleet ASW training and strike groups integrated ASW operational readiness assessments. FASWC was established in January 2004 with their headquarters in San Diego and detachments

in Norfolk, Virginia and Yokosuka, Japan. RADM John Waickwicz took command of FASWC in April 2004 and he will report to Commander, Fleet Forces Command.

To meet the Navy's long-term requirements for maintenance of the Navy's ASW core competency, TF ASW is an integral and ongoing effort lead by Sea Shield Flag leadership. TF ASW's transformational CONOPS is in final review and is scheduled to be completed in April 2004. The TF ASW vision is to "render the enemy submarine irrelevant against U.S. and coalition forces". This vision will be achieved by holding submarines at risk, forming protective maritime shields around sea bases and ensuring a safe, protected passage for forces transiting to and from the fight and has the characteristics of offboard, distributed sensor fields, unmanned vehicles, precision weapons, and reduced detect to engage timelines.

Mr. BARTLETT. How are Missile Defense Agency and Navy requirements for advanced radar systems being coordinated between the MDA and the Navy? How are those requirements reflected in MDA and Navy programs for development of advanced radar systems?

Admiral NATHMAN. Within the CNO's Seapower 21 capabilities, the ability to defeat theater air and missile defense (TAMD) threats, including ballistic missiles, forms the requirements for the Navy's investment strategy supporting in-service radars and development of capabilities and systems to counter emerging threats.

Missile Defense Agency (MDA) and the Navy have shared information on upgrades to ship's radars, with near-term requirements that include Aegis-equipped destroyer and cruiser developments in ballistic missile defense initial defensive operations (IDO) capabilities.

Near-term requirements are coordinated through the Aegis BMD program to provide IDO. Beyond the Block 04/IDO capability, MDA and Navy have not formally coordinated advanced radar requirements.

The Navy assessed a requirement to develop capabilities to counter future advances in ballistic missile threat and to simultaneously retain the capability to conduct long-range anti-air warfare (AAW) to defend maritime and expeditionary forces.

The Navy is developing advanced shipboard radar systems to meet the future capability of multi-mission AAW/BMD to provide assured access and ensure dominance in defense against air and missile threats, including ballistic missiles.

Mr. BARTLETT. Would you please describe the need and why it was not included in the original budget request? What impacts will the funding shortfall have on the entire program?

Admiral DAWSON. This issue will accelerate the fielding of additional, largely unmanned combat capabilities for the Flight 0 LCS by funding new LCS Modular Mission Package development, risk reduction experimentation and integration efforts. This additional LCS Flight 0 Anti Submarine Warfare (ASW), Surface Warfare (SUW), and Mine Warfare (MIW) performance will result from:

- (1) New ASW sensor and weapons development and testing bringing increased capabilities to the LCS Unmanned Surface Vehicles (the Remote Minehunting Vehicle [RMV] and SPARTAN), thus lessening Flight 0 reliance on manned helicopters for ASW. This includes reducing Flight 0 fielding risk by evaluating multiple sensor systems for the Sea Talon and SPARTAN Advanced Concept Technology Demonstrations (ACTDs) and by procuring additional RMVs to counter mechanical failures and attrition.
- (2) Firescout Unmanned Aerial Vehicle (UAV) sensor/command and control "sub-module" development, including initiation of new sensor development for "plug and play" use with the Firescout and transition of a communications relay for the Firescout to permit Over-The-Horizon (OTH) command and control of unmanned vehicles for Flight 0.
- (3) Gun system development to permit the Flight 0 fielding of increased SUW capability via the addition of new modular minor caliber guns.

These efforts were not included in the President's 2005 Budget submission because they are new opportunities that have been recently identified as the LCS mission package component definition has matured.

Not funding these items would result in increased risk for Flight 0 incorporation of these new capabilities or in delay of the described capabilities until Flight 1 or later. Failure to fund SPARTAN and RMV/Sea Talon system developments will increase reliance on manned helicopters for mission accomplishment and provide fewer platforms for operational flexibility in Flight 0. The lack of a data relay capability, in particular, would result in mission package operations limited to line-of-sight and positioning LCS Flight 0 closer to enemy threats to conduct missions. In-

clusion of the modular minor caliber gun module would increase LCS Flight 0 combat effectiveness for self-defense against small boats.

Mr. BARTLETT. The Office of Force Transformation has briefed me on the status of an approach to their study. I understand that the Secretary of Defense has delegated the other study that is to be conducted to the Navy for selection of the FFRDC. What is the status of the Navy study and when can I receive a briefing on the approach that is to be taken?

Admiral NATHMAN. The Office of the Secretary of Defense tasked the Navy in early March to select a Federally Funded Research Center (FFRDC) to perform the required fleet architecture study. Since that time the Navy selected the Center for Naval Analyses as the FFRDC and the study concept has been identified. Preliminary analysis work is in progress. A briefing on the approach being used for this study was provided to Representative Bartlett on April 2, 2004.

Mr. BARTLETT. In fairness, isn't what is now being built very different than what was proposed and bid on, which was in effect a torpedo with hand-holds, and now they are encapsulated inside? Isn't this very, very different? This migration was not primarily the fault of the contractor, is that not true?

Secretary YOUNG. Navy SEALs have historically used "wet" transport systems that exposed our forces to harsh environmental conditions. In the early 1990s, the Navy started examining the concept of more capable vehicles that would increase range and limit wet environment exposure of SEALs. The Navy evaluated a number of concepts submitted by industry in an Analysis of Alternatives (AoA). The AoA led to the selection of a dry submersible vehicle design now known as ASDS. The ASDS is the first dry combatant submersible developed for clandestine insertion and extraction of SEAL forces and their equipment. The ASDS provides for greater range, payload and endurance over current systems.

The Navy developed a set of Top Level Requirements and specifications based on the ASDS Operational Requirement Document in 1993. These requirements and specifications were in place when Westinghouse Electric Corporation Ocean Division, now Northrop Grumman Corporation, was competitively awarded the design and construction effort in 1994. The design and construction contract has remained unchanged since that time.

There have been a number of technical issues that have required resolution. These issues centered on the contractor underestimating the technical challenges associated with the design and construction of the first of a kind combat submersible to meet the stated requirements. The contractor and the Navy have worked through the system development deficiencies and the Navy took final acceptance of ASDS-1 in June 2003.

Mr. BARTLETT. Why aren't we doing more of the semi-submersible where we put the biggest part of our vessel underwater, and only that part above water which needs to be there to capitalize on the benefits of being above water?

Admiral NATHMAN. The reason we don't build large semi-submersibles relates to three problems induced by that design-weight, drag and cost. Submersible hull forms require extra ballast tanks in order to submerge (or partially submerge) the vessel. This adds weight, complexity and cost to those systems. The additional surface area, which would be underwater as a result of a semi-submersible hull form, would also induce a significant drag problem. That said, we continuously explore the underlying science regarding hull forms and the like.

Mr. BARTLETT. The 1994 Mission Needs Statement (MNS) for the old DD-21 destroyer continues to serve as the foundation mission-requirements for the DD(X). In light of developments since 1994, is the 1994 MNS still valid as a foundation description of the missions to be performed by DD(X)? What analysis has been done to determine that DD(X) is the best way to accomplish these missions?

What are the Marine Corps' current requirements for naval surface fire support? How are they being met now and how will they be met by the DD(X) multi-mission destroyer?

Admiral NATHMAN. The Spiral Development Review, conducted in conjunction with DD-21 restructure to DD(X) (January-July 2002) revalidated both the SC-21 Mission Needs Statement (MNS) and the SC-21 Cost and Operational Effectiveness Analysis (COEA). In the Naval Capability Development Process we determined that DD(X) played a significant role in filling fire support requirements early in an assault.

The Marine Corps' Naval Fires requirements are articulated in a letter from the Marine Corps Combat Development Command to the Navy. In the letter, fires needs are laid out in near-term, mid-term and far-term goals. Navy development of 5"/62 gun technology aboard current Arleigh Burke class destroyers (DDG 81 and follow on) with Extended Range Munitions fills near-term needs. A total of 32 DDGs will have the 5"/62 gun when the DDG production line concludes with DDG 112. DD(X)

with the 155MM Advanced Gun system will have the ability to deploy a high volume of affordable, precision-guided munitions with significantly improved ranges, accuracy, volume, firing rates and response times to fill mid-term and initial far-term goals.

Mr. BARTLETT. Last year during this subcommittee's review of the Navy's budget request for research and development, we expressed concern about the lack of a formal analysis of alternatives to demonstrate that a ship like the LCS would be more cost-effective for performing the stated missions than potential alternative approaches.

What has been done since then to demonstrate, analytically or otherwise, that LCS will indeed be the most cost-effective alternative for performance of the LCS mission in comparison to other naval systems?

Admiral NATHMAN. The Naval Capability Development Process revealed a compelling joint need for rapid identification and clearance of maritime threats in the littorals. LCS requirements were borne of and directly linked to this analysis and the CNO's desire to close the identified mission gaps as soon as possible.

Additional analytic effort in support of the Assured Maritime Access in the Littorals Initial Capabilities Document (ICD) focused on a comprehensive Functional Solutions Analysis (FSA), which was validated by the Joint Requirements Oversight Council (JROC) March 8, 2004. The LCS Analysis of Multiple Concepts (AMC) considered potential materiel solutions including those from existing force structure, upgrading existing force structure, and combinations of other Navy and Joint platforms that could address the validated littoral capability gaps. The results of these analyses showed that a relatively small, shallow draft and high-speed ship (the Littoral Combat Ship) was the best and most cost-effective alternative.

Mr. BARTLETT. What is the urgent operational need that justifies such a rapid acquisition strategy? Is it realistic to expect that we will have defined the requirements and design for the program in such a short period of time?

Admiral NATHMAN. The urgent requirement to counter existing anti-access threats in the littorals drives the rapid acquisition strategy. The requirement is compelling and well-defined and we are confident in the design of the sea frames and mission modules; The Flight 0 modules are being built around mature technologies that have been tested at sea. Since the sea frame and modules are decoupled, LCS' spiral development acquisition strategy is well-suited to pace the threat and rapidly incorporate lessons learned from employment and new technology to adjust mission packages within the modules whenever needed.

In your statement you note that the FY 2005 budget request includes \$352 million of RDT&E funding for LCS platform and mission system development and initial ship procurement, that mission modules will deliver in support of the LCS Flight 0 sea frame delivery in FY 2007, and that Flight 0 will develop and demonstrate several new approaches to naval warfare including suitability of large-scale modular mission technologies and new operational concepts in the littoral.

Mr. BARTLETT. Do you believe that the program schedule provides sufficient time and capabilities for experimentation with, and evaluation of the operational concepts for LCS before committing to major serial production of the ship? What measures are being taken to evaluate alternative mission modules and concepts of operations before fixing on the final design for ship and for the mission modules? Will the results of these evaluations be available in time to feed back into the design?

Admiral NATHMAN. Yes. The Navy believes that the tailored LCS acquisition schedule provides sufficient time for experimentation and evaluation while achieving the CNO's direction to rapidly deliver LCS capability to the war fighter. To support the accelerated acquisition, LCS Flight 0 is utilizing systems already developed or in the final stages of development. LCS will also benefit from ongoing testing of both advanced hull forms, such as HSV-X1, HSV-2, and X-Craft and mission systems employment from those ships. The LCS Spiral Development approach is specifically designed to allow the Navy to incorporate lessons learned from the experimentation without disrupting sea frame design and development.

Mr. BARTLETT. Because LCS would establish a new paradigm for construction and operations of focused mission ships with interchangeable mission module packages, should consideration be given to delaying serial production of LCS following production of a limited number of LCS Flight 0 in order that the LCS may be given a thorough operational evaluation?

Admiral NATHMAN. The Navy does not believe any benefit would be derived from delaying production of Flight 1. The tailored LCS acquisition schedule and Spiral Development approach provide sufficient time for experimentation and evaluation while rapidly delivering needed capability to the war fighter.

Secretary YOUNG. The Navy does not believe any benefit would be derived from delaying production of Flight 1. The tailored LCS acquisition schedule and Spiral

Development approach provide sufficient time for experimentation and evaluation while rapidly delivering needed capability to the war fighter.

Mr. BARTLETT. What is the status of the X-Craft Project?

Admiral COHEN. The vessel is currently under construction at Nichols Brothers Boat Builders in Whidbey Island, WA. The keel was laid in June 2003. Delivery is expected in late January 2005.

Mr. BARTLETT. What technologies are being demonstrated in the X-Craft?

Admiral COHEN. See below.

- X-Craft will demonstrate high-speed catamaran hull form technology with an active ride control system designed to allow speeds of 50 knots in calm seas and 40 knots in Sea State 4 (wave heights of up to eight feet).
- It will demonstrate one form of mission modularity using standard twenty-foot equivalent unit (TEU) containers, providing 12 container landing sites in the Mission Bay. Resource panels for power, chilled water and data connections will be provided at each location.
- Flight Deck and Mission Bay deck panels are being joined by a friction stir welding technique that eliminates practically all heat distortion.
- The Flight Deck is being fitted with a prototype Night Vision Goggle-compatible visual aid system, which will be refined during the vessel's first year of operation and will be used to develop performance specifications for similar systems on DD(X) and possibly Littoral Combat Ship.
- The vessel will be outfitted with an array of sensors, including strain gauges, pressure sensors and accelerometers, to accurately measure the vessel's response to various seaways. This data will be made available to other acquisition programs for use in structural design and human system interfaces.
- An innovative stern ramp will allow launch and recovery of small boats up to the size of an 11 meter rigid hull inflatable boat, as well as unmanned underwater vehicles, and will also extend to provide Roll-on/Roll-off (RORO) capability for vehicles up to the size of HMMWVs.
- It will serve as an experimentation platform for LCS, demonstrating/testing mission equipment deployment/retrieval, mission package interfaces, Crew performance, operations with distributed, networked sensors, and other areas as necessary to mitigate LCS risk.

Mr. BARTLETT. What are alternative uses that might be considered for an advanced craft similar to X-Craft?

Admiral COHEN. X-Craft is designed for large scale, high speed hydrodynamic experimentation. A secondary mission will include operational concept development and mission package testing. With future installation of upgraded C4I equipment and weapons systems, it could also serve as a coastal defense platform or even as a deployable asset, with a primary mission of battle force protection. X-Craft (with modifications) may be considered for functions currently under consideration in the U.S. Coast Guard Deepwater program (i.e., the Medium Endurance Cutter). A highly modified version of the X-Craft design may also be considered for oceanographic work in the University-National Oceanographic Laboratory System fleet.

Mr. BARTLETT. Why is funding for the Joint Forces Command's joint experimentation program contained in the Navy's science and technology appropriation?

Admiral COHEN. The Navy serves as the DoD Executive Agent for all Joint Forces Command programs to include joint experimentation. When joint experimentation was established by the Congress in 1998, funding for the program was naturally aligned with the other programs handled by Office of Naval Research as the Navy's S&T manager.

Mr. BARTLETT. Should it not be contained in the defensewide, rather than a Navy account?

Admiral COHEN. The Navy serves as the DoD Executive Agent for all direct funding received by Joint Forces Command. This includes RDT&E, O&M,N and OPN. The Navy performs Departmental level budgeting and accounting Joint Forces Command. However, the addition of this program to DON S&T distorts the true amount of naval science and technology funding in the budget. Joint Forces Command's joint experimentation program is \$165 million in FY04—almost 10% of DoN S&T budget. Joint Forces Command funding should be moved to a budget activity 4 line where it won't distort the DoN S&T budget.

Mr. BARTLETT. If funding for Joint Forces Command's joint experimentation program remains in a Navy account, does it belong in the science and technology account, or should it be carried in an advanced concept development and prototyping account (6.4)?

Admiral COHEN. The joint experimentation program has evolved with focus areas that go beyond science and technology. As such, it could be carried in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) which "includes efforts necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment are funded in this budget activity. The ACD&P phase includes system specific efforts that help expedite technology transition from the laboratory to operational use." Joint experimentation transformation efforts are focused on the experiments and placing advanced concepts into the hands of the regional combatant commanders for validation, testing and refinement of the concepts. Joint experimentation efforts are pre-Milestone A and prior to Program of Record decisions.

Mr. BARTLETT. The certification of the FY2005 MCM program by the Secretary of Defense and the Chairman, Joint Chiefs of Staff was received by Congress on March 8, 2004. What will be the effect on the certification of the recent review of the MCM program ordered by Secretary Young and Defense Comptroller Zakheim's proposed transfer of funds from the MH-60R helicopter to the VXX helicopter?

Secretary YOUNG. The MH-60S helicopter is the Organic Airborne MCM platform, not the MH-60R. The MH-60R helicopter is the replacement for the SH-60B and SH-60F, and will be used in the ASW and SUW role. Any funding transfer from the MH-60R to the VXX should have no effect on the 2005 MCM plan.

Mr. BARTLETT. Under the announced acquisition strategy for LCS, Congress is being asked to approve the funding to build the lead ship less than 3 years after the program was first announced. This is a very rapid schedule, even by the new standards for reducing acquisition cycle time.

What is the urgent operational need that justifies such a rapid acquisition strategy? Is it realistic to expect that we will have defined the requirements and design for the program in such a short period of time?

Secretary YOUNG. The urgent requirement to counter existing anti-access threats in the littorals drives the rapid acquisition strategy. The requirement is compelling and well defined and we are confident in the design of the sea frames and mission modules. The Flight 0 modules are being built around mature technologies that have been tested at sea. Since the sea frame and modules are decoupled, LCS' spiral development acquisition strategy is well suited to pace the threat and rapidly incorporate lessons learned from employment and new technology to adjust mission packages within the modules whenever needed.

Mr. BARTLETT. In your statement you note that the FY 2005 budget request includes \$352 million of RDT&E funding for LCS platform and mission system development and initial ship procurement, that mission modules will deliver in support of the LCS Flight 0 sea frame delivery in FY 2007, and that Flight 0 will develop and demonstrate several new approaches to naval warfare including suitability of largescale modular mission technologies and new operational concepts in the littoral.

Do you believe that the program schedule provides sufficient time and capabilities for experimentation with, and evaluation of the operational concepts for LCS before committing to major serial production of the ship? What measures are being taken to evaluate alternative mission modules and concepts of operations before fixing on the final design for ship and for the mission modules? Will the results of these evaluations be available in time to feed back into the design?

Secretary YOUNG. Yes. The Navy believes that the tailored LCS acquisition schedule provides sufficient time for experimentation and evaluation while achieving the CNO's direction to rapidly deliver LCS capability to the war fighter. To support the accelerated acquisition, LCS Flight 0 is utilizing systems already developed or in the final stages of development. LCS will also benefit from ongoing testing of both advanced hull forms, such as HSV-X1, HSV-2, and X-Craft and mission systems employment from those ships. The LCS Spiral Development approach is specifically designed to allow the Navy to incorporate lessons learned from the experimentation without disrupting sea frame design and development.

Mr. BARTLETT. Original estimates for LCS included the cost of the ship or sea frame at about \$150 million and the mission module package at about \$100 million for a total cost of \$250 million. Recent articles in the media have noted estimated costs of \$250 to \$400 million for the ship and its mission module and have also asserted that you, Secretary Young, were attempting to drive the cost toward the lower end of that range.

What are your views on the cost of the ship and its affordability if the high cost estimate becomes a reality?

Secretary YOUNG. The LCS Flight 0 Phase III Preliminary Design contract establishes a cost threshold for the sea frame of \$220M and an objective of \$150M in FY 2005 dollars. An OSD Cost Analysis Improvement Group (CAIG) independent cost

assessment will be available prior to Milestone A approval by OSD. The mission modules intended for LCS Flight 0 are being developed concurrently utilizing existing technology with cost varying according to module composition. The cost of LCS will fall over time from initial costs due to learning curve, quantities purchased and technology application. The cost threshold of \$220M and objective of \$150M still represents a fraction of the cost of multimission ships and represents excellent value to the Navy.

Mr. BARTLETT. What is the basis for the Navy's decision to drop its previous acquisition strategy for CEC Block 2 in favor of the program for development of a Joint Single Integrated Air Picture?

Secretary YOUNG. CEC Block 2 was planned to provide the single Track Management (TM) function for the Navy's Open Architecture program. Given the rapidly maturing Joint Single Integrated Air Picture Engineering Organization (JSSEO) initiative and its overlap with functionality to be delivered with the planned CEC Block 2 competition, the Navy determined it would leverage this opportunity to field a new CEC variant that would integrate with JSSEO's planned Joint TM solution as a key contributor to the Department's Joint Air and Missile Defense Integrated Architecture.

Mr. BARTLETT. Is the Navy's new acquisition strategy appropriate in terms of competition and required system capabilities?

Secretary YOUNG. The proposed Navy acquisition strategy for CEC is compliant with all federal procurement statutes and regulations, and it includes planned competition. The proposed acquisition strategy includes competition for selection of a System Integrator and Design Agent for CEC integration on Navy platforms and to address other Navy open architecture initiatives related to sensor netting. CEC required system capabilities would be maintained under the revised strategy.

Planned upgrades of the Block 1 system will continue and incorporate the latest technology via pre-planned product improvement efforts to achieve size, weight, cost, and open architecture goals.

Mr. BARTLETT. What is the status of the AWS program? What is the plan for completing development, demonstration and fleet evaluation of the AWS? In view of recent programmatic delays do you expect that additional funds might be required in FY 2005 to complete the operational evaluation?

Secretary YOUNG. AWS was initiated in FY99 by ONR to develop a less costly cruise missile capability. Our current effort is focused on evaluating the AWS, as currently developed by Titan, against existing Navy requirements for shipboard compatibility. Specific areas include:

- Complete remaining development efforts from the initial ONR efforts, resulting in a Titan designated baseline missile;
- Validate range, loiter and payload capabilities (No Navy requirement, so we will validate their stated claims);
- Evaluate the missile in the shipboard environment (compatibility, insensitive munitions, marine environment, electro-magnetic interference, radiation hazard, dud safety, etc.) against current Navy standards; and
- Evaluate efforts to stand up a production capability and validate Titan's proposed production costs and capabilities

We are currently under contract with Titan for the efforts noted above. Per the statement of work, Titan will complete developmental testing initially planned for ONR S&T efforts. This testing should result in the establishment of the Spiral O baseline missile. Titan has negotiated to produce 20 missiles (no warhead) in CY 04 and flight test the missiles to demonstrate vehicle launch, flight and targeting performance.

Based on results of the FY04 effort, the Navy plans to conduct insensitive munitions tests, qualification testing, and limited Developmental Test (DT) in FY05. Following the completion of the FY04/05 efforts, the Navy will decide whether or not to pursue AWS as a Program of Record based on warfighting requirements, weapon performance, producibility, actual manufacture costs, demonstrated capability and shipboard suitability. If the Navy makes the AWS a program of record, it is anticipated that Operational Test and Evaluation (OT&E) would be conducted in FY06.

Mr. BARTLETT. The AWS project office does not anticipate a requirement of additional funds over the FY05 President's Budget request to complete the operational evaluation.

Should the fleet evaluation of AWS prove successful, what is the operational role that might be envisioned for such a weapon system?

Secretary YOUNG. The Navy has not defined a concept of operations for the AWS. Titan has advertised the AWS as a weapon capable of delivering a 200-lb warhead against fixed targets. The missile is envisioned as a loiter vehicle that could stay

aloft in a particular area and could then be targeted by a forward observer onto a stationary target using GPS/INS terminal guidance.

The most likely concept of operation for this system in the near term is as a ship-based, land attack missile.

Mr. BARTLETT. What is the estimated unit cost of the AWS in production?

Secretary YOUNG. Titan has proposed a 1,000 missile quantity cost of approximately \$55K per missile and a 100 missile quantity cost of approximately \$91K per missile. NAVAIR estimated cost is \$150K per missile. The initial proposal from Titan for the 20 missiles under the FY04 contract, was \$150K per missile. As we went to contract, Titan increased the cost to \$290K per missile. All costs are based on the Titan designated missile baseline. All missile unit costs do not include a warhead. Part of the ongoing evaluation is to determine what existing warheads are capable of being carried within the design payload.

The final unit cost of the AWS missile integrated into a Navy shipboard environment is the focus of the current effort. Navy has not asked for any enhancements to the current Titan missile design.

Mr. BARTLETT. What lessons are being learned from the AWS prototype development and demonstration program? Could AWS represent a paradigm for rapid development and acquisition programs?

Secretary YOUNG. AWS is one of the first prototype efforts that we are accelerating to maturity under capability-based requirements. It is causing us to examine how we assess a new capability against our current requirements.

We do not believe this to be a paradigm shift, but it is consistent with efforts to streamline acquisition process and the use of COTS products. This effort reinforces existing policies to change and improve the acquisition process.

Mr. BARTLETT. What are the Marine Corps current requirements for naval surface fire support? How are they being met now and how will they be met by the DD(X) multi-mission destroyer?

General HANLON. The Marine Corps' requirements for naval fire support are defined in a 19 March 2002 Naval Surface Fire Support Requirements for Expeditionary Maneuver Warfare letter from the Deputy Commandant for Combat Development to the Chief of Naval Operations [Hanlon letter]. The letter details the need for a robust fire support system that is responsive, persistent, accurate, lethal, and scalable in order to support the Navy and Marine Corps transformational concepts of *Sea Power 21*, *Expeditionary Maneuver Warfare (EMW)*, *Operational Maneuver from the Sea (OMFTS)*, and *Ship-to-Objective Maneuver (STOM)*. Naval fire support for expeditionary operations must be capable of appropriately engaging the full spectrum of target sets throughout the littoral battlespace based on target size, location, posture, and protection. Unlike strike planning, fire support target pairing is dependent on the relationship of the target to tactical operations, which is expressed in the four doctrinal roles of fire support—close supporting fire, deep supporting fire, counterfire, and suppression of enemy air defenses (SEAD). An identical type of target that is engaged at the tactical level with close supporting fires will very likely require a different degree of responsiveness, accuracy, lethality, and volume than if it were engaged with deep supporting fires as an operational-level target. Therefore, tactical-level fire support drives the critical attributes for naval fire support. The naval fire support system must have sufficient redundancy and capacity to ensure that the demand for fires in support of maneuver forces can be continuously provided throughout the littoral battlespace, day or night, in all weather conditions, and against all threats. A triad of naval aviation, sea-based Naval Surface Fire Support (NSFS), and shore-based fires is fundamental to ensuring that naval expeditionary forces have the full range of fire support required during operations from the Sea Base through objectives ashore. Naval aviation initiatives and Marine Corps artillery and rocket acquisition initiatives address the air and shore components of the naval fire support system.

NSFS shortfalls have existed since the decommissioning of battleships in 1992 and today the Navy's limited NSFS capabilities do not support naval expeditionary concepts. Several initiatives have been undertaken since then to improve current capabilities, and to develop future capabilities to meet NSFS requirements set forth in the Hanlon letter.

The Navy's next generation destroyer, DD(X), with two 155mm Advanced Gun Systems and more than 600 rounds of ammunition on board will play a key role in meeting NSFS requirements for future Marine Corps employment concepts. While fire support principles inherently depend on complementary and redundant options to support ground forces, the DD(X) represents the longest range (up to 100nm), most lethal (155mm) naval round available to those forces. The DD(X) will provide forces ashore and afloat with the ability to plan for and engage targets from over the horizon in a multitude of scenarios, from covert raids to forced entry oper-

ations, in a 24-hour all-weather environment. Recent combat operations, as well as multiple operational plans, have confirmed the need for a long range, all-weather fire support capability. While the DD(X), as currently designed, will provide for multi-mission needs such as antisubmarine, anti-air, anti-surface, and missile defense, the land attack capability of this ship makes it the preferred surface combatant for forces ashore. Marine Corps and Army forces alike would greatly benefit from having a flexible all-weather, 24-hour, responsive land attack capability during operations ashore when organic indirect fire assets are not available, or are not planned to come ashore. This flexibility, coupled with sustained on station time, and underway replenishment gives the commander many options when developing his fire support plan. Without effective Naval Surface Fire Support provided by DD(X), Marines ashore will be limited in times of need for critical fire support.

QUESTIONS SUBMITTED BY MR. CALVERT

Mr. CALVERT. Last month, CBS did a story on the problems plaguing the Patriot PAC-3 Missile. Specifically, the news report identified that despite millions of dollars invested into the testing and development of this system, it mistakenly identified aircraft as missile, friendly aircraft as enemy targets, and sometimes spuriously identified targets when none existed. Now I understand that the Patriot is not a Navy program, but the Navy's Independent Assessment agent at NSWC Corona does a lot of Joint Work, to include helping other Federal Agencies like NASA.

As we push deeper into transformation and spiral engineering, how do we drive the Navy's successful Independent Assessment capability through to the other Services?

Secretary YOUNG. The Navy has a successful history with NSWC Corona's independent assessment expertise and mission of performance, quality, and readiness assessment. Acting on behalf of the program manager and as the independent assessment agent separate from design or production responsibilities, Corona has been integral to the success of crucial Navy programs such as Aegis, Polaris, Poseidon, and Trident missiles, Standard Missile, and Cooperative Engagement Capability (CEC). The fleet providers and the platform type commanders also use NSWC Corona as technical assessment experts who are independent from the program offices and the design and in-service engineers.

More recently, various Joint and/or multi-Service programs in the Joint Forces Command (JFCOM) and Joint Theater Air Missile Defense Organization (JTAMDO) are availing themselves of Corona's independent assessment. These include programs such as the Joint Single Integrated Air Picture System Engineering Organization (JSSEO), the National Capitol Region Air Defense Integrated Air Picture Assessment, and the Joint Service Combat Identification and Evaluation Team (JSCIET). Most recently, NSWC Corona assisted the Missile Defense Agency (MDA) in developing a mission assurance quality plan and also performs Sea-based Mid-course performance assessment.

Through the continuing growth in Joint programs, the other Services will gain an appreciation for the added value of technical independent assessments. In addition, OSD (AT&L) has an initiative that allows an individual program manager to request a third-party assessment. This has been implemented on various programs in the three Services. Adopting the independent assessment discipline practiced by the Navy's NSWC Corona as a model for the Services would enhance program management from the standpoint of best practices, consistent approaches, and reduced costs.

Mr. CALVERT. As the Department of the Navy continues to transform itself in accordance with the desires of the Secretary of Defense, what role does the Independent Assessment function, as practiced solely at NSWC Corona have?

Secretary YOUNG. Independent assessment has been successfully applied to numerous Navy programs over the years. The Department of the Navy is transforming to improve joint readiness and acquisition processes by which new capabilities can be rapidly, effectively, and efficiently delivered. Independent assessment remains an important aspect of this transformation, given the pace of new capabilities development, technology insertion, and the accelerated fielding of Joint interoperable systems. This important role provides the framework to deliver consistent and disciplined assessment of major systems' effectiveness and suitability.

Mr. CALVERT. Since Independent Assessment is a function that provides honest assessment to correct major/minor flaws in systems and weapons during the development and deployment process potentially saving billions of dollars and countless lives; and since it is applied in a Joint environment already; and since Independent Assessment fits easily into the Spiral Development Process, what plans does the

Navy and DoD have to emphasize and strengthen this function in order to better support transformation efforts?

Secretary YOUNG. Navy transformation efforts are continuing. Independent assessment, separate from the product-line responsibilities of cost, schedule, and performance, better helps program managers understand and direct program efforts. Because independent assessment has been important to successful Navy programs in the past, independent assessment will continue to provide program managers with critical feedback to help identify and correct flaws in systems and weapons. As the Navy and DoD transformation matures, the independent assessment function becomes more important to success in spiral development and we expect that role to strengthen and expand.

FISCAL YEAR 2005 NATIONAL DEFENSE AUTHORIZATION ACT—UNITED STATES TRANSPORTATION COMMAND'S AIRLIFT AND SEALIFT PROGRAMS

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROJECTION FORCES SUBCOMMITTEE,
Washington, DC, Wednesday, March 17, 2004.

The subcommittee met, pursuant to call, at 4:04 p.m., in room 2212, Rayburn House Office Building, Hon. Roscoe Bartlett (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. ROSCOE BARTLETT, A REPRESENTATIVE FROM MARYLAND, CHAIRMAN, PROJECTION FORCES SUBCOMMITTEE

Mr. BARTLETT. The hearing will come to order.

This afternoon the Projection Forces Subcommittee meets to receive testimony from General John W. Handy, United States Air Force, Commander of the United States Transportation Command.

Our hearing today will focus on the current and future state of our airlift and sealift transportation forces. Over the past ten years, the United States has reduced its Cold War infrastructure and closed two-thirds of its forward bases. This seems that to maintain the same level of global engagement, U.S. forces must deploy more frequently and over greater distances.

During an average week, the United States Transportation Command, TRANSCOM, operates air mobility missions transiting 52 countries, operates in 22 military ocean ports in 13 countries and has 20 chartered military ships underway.

Thirty-six additional government-owned and chartered vessels loaded with military cargo are strategically pre-positioned around the world, significantly increasing the responsiveness of urgently needed U.S. military equipment and supplies during a time of crisis.

During peacetime, TRANSCOM frequently finds itself operating at levels during day-to-day operations that closely parallel those of a contingency. Today we are engaged in contingency operations.

TRANSCOM is the key enabler, ensuring that combat forces and equipment are available to support Operations Enduring Freedom and Iraqi Freedom.

In fact, Operations Enduring Freedom and Iraqi Freedom now rank as the largest passenger airlift in history. Only the Berlin airlift exceeds it in terms of the number of missions and tonnage flown.

It is important to note that TRANSCOM currently combines these wartime missions with other worldwide war-on-terror oper-

ations, such as support for detainee operations in Guantanamo Bay, additional contingency in peacekeeping operations around the globe, and exercises, which are vitally important to keep our forces trained and ready.

In the 1990s, the Department of Defense undertook a series of studies to quantify requirements and identify shortfalls in the Department's wartime transportation needs. After some refinement of earlier studies, the most recent study, "Mobility Requirement Study: 2005," or MRS-05, was completed in 2001.

This analysis concluded that pre-positioning, surge sealift, inter-theater lift and continental United States transportation assets are largely satisfactory. But the earlier airlift requirements of 49.7 million ton-miles per day needed to be raised to 54.5 million ton-miles per day.

Although some MRS-05 scenarios generated airlift requirements up to 67 million ton-miles per day, the Joint Chiefs of Staff and theater commanders agreed that the requirements for 54.5 million ton-miles per day would be the minimum moderate-risk capability to support the national military strategy.

I am particularly concerned about today's airlift force structure since our current airlift forces provides only 44.7 million ton-miles per day, a shortfall of 9.8 million ton-miles. Additionally, I note that the MRS-05 study was completed before September 11, 2001, and our airlift and sealift needs for the ongoing global war on terror have not yet been fully assessed.

General Handy, we look forward to your testimony today to help us understand the current status and future requirements of our airlift and sealift transportation forces as we continue the global war on terror.

I would like now to recognize the gentleman from Mississippi, my friend, the Ranking Member of our subcommittee, Gene Taylor, for any remarks that he would like to make.

[The prepared statement of Mr. Bartlett can be found in the Appendix on page 243.]

STATEMENT OF HON. GENE TAYLOR, A REPRESENTATIVE FROM MISSISSIPPI, RANKING MEMBER, PROJECTION FORCES SUBCOMMITTEE

Mr. TAYLOR. Thank you, Mr. Chairman. But since you told me to keep it brief, I am going to thank our witness for being here. Is that brief enough?

Mr. BARTLETT. Thank you very much.

General Handy, without objection, all of your prepared testimony will be a part of the record. And we now welcome any remarks that you would like to make before questions and answers. The floor is yours.

STATEMENT OF GEN. JOHN W. HANDY, USAF, COMMANDER, U.S. TRANSPORTATION COMMAND, UNITED STATES AIR FORCE

General HANDY. Sir, thank you very, very much. For the fact that my statement is submitted for the record, I have some very brief comments, but not as brief as Mr. Taylor's opening comment.

I would like to point out that, as the Combatant Commander of Transportation Command (TRANSCOM), I represent 152,000 soldiers, sailors, airmen, Marines, as well as Coast Guardsmen, who constitute that workforce that we are so proud of today.

Those folks are represented by three components—Army, Navy and Air Force—so that we are responsible for everything that moves in the defense transportation system—air, land and sea—as you well know.

It is remarkable to me as I sit as the Commander to understand that we have moved over 1.3 million people back and forth between just the continental U.S., Europe and Iraq and Afghanistan, and almost 3.4 million short-tons of cargo.

Those are staggering numbers. Without those people and the assets that they managed, these would be virtually impossible.

Quite often we emphasize the airlift, air refueling, the sealift and the rail and truck traffic that we have. But we also have dramatic requirements in our entire system to include Halvorsens and Tunner loaders.

All of that package and all of those people add up to do the things that this command does. And I am so very proud of that.

And I am thankful for the opportunity to appear before this committee and be able to answer your questions. And therefore I am ready, sir.

[The prepared statement of General Handy can be found in the Appendix on page 247.]

Mr. BARTLETT. Thank you very much, sir.

Your people are pretty obviously the unsung heroes. Everybody just expects the people and the things are going to be there for the operation. And thanks to you and your people, they are there.

Let me turn now to my colleague, Mr. Taylor, for his comments and questions.

Mr. TAYLOR. General, first, I am going to do this on behalf of my colleague, Mr. Wicker, who is an appropriator, so keep this in mind, that this is important.

In your testimony you mentioned the requirement for the 618 Halvorsen motors. Currently, 312 of them have been funded, leaving 306 for subsequent program objective memorandums for finishing. He points out that there is zero funding in the 2005 budget, and we would appreciate your thoughts on how the Air Force is going to proceed with funding the remaining 306.

General HANDY. Our hope, sir, is that we would be able to find somewhere in the Air Force budget the ability to extend that Halvorsen line.

The thing that concerns me the most is that these loaders, first off, are performing flawlessly in the field today, doing an incredible job. They are replacing our 25K loaders. These loaders are older than their numerical designation.

And while they may be working reasonably well in the field, it is not like any other system: The older they have gotten, the higher the cost of maintenance is.

And so from a combatant commander perspective, I would like to be able to encourage the Air Force to include dollars in their budget which they were not able to do in 2005. And I am hopeful that we can get into the 2006 budget, to certainly preclude a line draw-

down or any other possible situation that would not continue getting Halvorsens into our hands and out to the war-fighters to be able to use to load and offload our aircraft.

And so, that is an ongoing debate within Air Mobility Command, my airlift component, air refueling component, and the air staff as they build that budget.

Mr. TAYLOR. Do you anticipate including it in some sort of an unfunded requirement list during this budget cycle?

General HANDY. We will always, from a TRANSCOM perspective, insist that we are supplied with everything we need and to make those needs as well-known as we possibly can.

Mr. TAYLOR. General, I happen to have been in this very room shortly after the first Gulf War when a group of members put the money in for the medium-speed, roll-on/roll-off ships that really were not asked for by the Navy. And they actually had to overcome the objections of the then-subcommittee chairman, and a great American, Charlie Bennett. And of course, years later, everyone says what a great idea that was.

If you recall, after the first Gulf War, we had to go out and charter something in the neighborhood of 90 foreign-flag vessels to resupply our troops.

I say that only in that nothing lasts forever. The world continues to change.

And I was very interested in hearing my colleagues mention the 20 chartered vessels. Was that 20 foreign-flagged vessels that had to be chartered for this, or were they 20 American-flagged vessels?

General HANDY. That is at any given time, the numbers he gave. And that is ships generically.

We always go to U.S.-flagged first, and only go to foreign-flagged when we have exhausted all bidders to a request for proposal. And it is only then that we go to and use a foreign-flagged ship.

Mr. TAYLOR. Did you go to any foreign-flagged ships this time?

General HANDY. Yes, indeed we did.

Mr. TAYLOR. And what types of ships are those?

General HANDY. They run the range, the gamut. Our greatest need was in roll-on/roll-off ships, much like the LMSRs (large medium speed roll-on/roll-off), and roll-on/roll-off ships that you described. That is the most in-demand ship that we have.

And we exhausted all of our capabilities even with the LMSRs and the common-user, pre-positioned ships once they were released, and all of the capability of the U.S.-flagged fleet and then dug into some small numbers of the foreign-flag.

We also had to use some foreign-flag and some smaller-sized ships.

Mr. TAYLOR. Number one, as a citizen in support of the military, I recognize that we do not have a monopoly on good ideas and that from time to time it makes sense if you see a good platform out there, to try it out before you buy it. Now, I understand that was the case with some of the high-speed ferries that were used.

The concern I have and the concern the folks in the American industrial base have is that this could lead to the acquisition of vessels like that from overseas. And as someone who represents ship-building country, and who is very keenly afraid of the loss of our industrial base, I would certainly hope that the use of these vessels

was only as a demonstration and will not become a pattern as far as actually acquiring them overseas.

But I want to hear your thoughts on that for the exact same reasons that I wanted to see Boeing build the tankers and not Airbus. I am very much concerned about the American industrial base, particularly for our second-tier and our larger shipyards.

General HANDY. Absolutely. I can give you a perspective from one who is outside that equation right now.

The Army and Marine Corps have leased those—and they go by either HSV, high speed vessel, or TSV, theater support vessel. They have leased them and used them in an intratheater role. They are not TRANSCOM assets. They are not managed by my naval component, for example.

But we are very familiar with it, and we have watched that experiment and the use of those assets for a whole wide range of reasons, not the least of which is the impact on the defense transportation system, how they might either solve or create seams, and how we service our combatant commander in an AOR (Area of Responsibility) anywhere in the world.

From our perspective—and yes, for the TRANSCOM perspective—these are very small and fairly limited niche capabilities. I do not want to sound too critical of them, but from a TRANSCOM perspective, we find better use of roll-on/roll-off ships the size of the LMSRs. We are talking 950-foot long, 150-foot wide. They displace 34 feet of water. They have got tremendous capabilities.

But the typical TSV will handle about a battalion's worth of capability. And so they are more of an intratheater coastal capability than they are for open ocean transit of large things that we would tend to utilize and have more of a need for.

Mr. TAYLOR. But should they become a part of your inventory? I would like to hear your thoughts as to whether or not it would be your preference to have them made in America as opposed to overseas.

Because, again, I guess what I am searching for is, if I am going to hear that your preference is to buy them overseas, should they become part of the inventory? Then I and others would probably try to put "Made in America" language into the bill, just to make our intentions known.

General HANDY. I know exactly where you are going. I fall into that category of person who says, "Build it in America." Pure and simple. It may be the easiest question I have had all day. I just do not see a need to go shop offshore, if you will.

Mr. TAYLOR. Looking ten years out, you know, I got here just in time for Just Cause. Actually, I got here just in time for the Berlin Wall to come down, when everyone told me peace had broken out. And there was a momentary euphoria, interrupted by Just Cause, for which we have seemed to have one conflict after another since.

Looking ten years out, since it usually takes us about ten years to solve a problem, what do you feel like this committee needs to be addressing, from TRANSCOM's point of view? What voids will need to be filled in the next decade?

General HANDY. Yes, sir. The very first thing is about to kick off this spring. And in terms of committee support, it is for the mobil-

ity capability study that OSD, the Office of Secretary of Defense, and the Joint Staff are about to undertake.

Their target is March of this year. Take a year to do that and report out sometime in the March, April or spring of 2005.

Now, we in TRANSCOM have urged that study for some time for many of the reasons that both of you mentioned already, and that is the Mobility Requirement Study of 2005 (MRS-05) was actually released in January 2001, but done in 2000. And immediately it was an attempt to try to predict what the requirement in the world would be in 2005. And that is the nature of trying to predict things.

As hard as they worked and as dedicated as they studied it, it still preceded September 11, 2001, the global war on terrorism, the creation of U.S. Northern Command, the Department of Homeland Security, and on and on and on. And so the requirements in our business have gone up dramatically, compared to what MRS-05 thought they would be.

And so we, for that reason, to help establish a baseline requirement of analysis that we could all chew on, and then say what ought we to do for the niche requirements that we in TRANSCOM have for mobility, and that is where I am headed.

So the first thing is to push, watch, be very aware of the progress of that mobility capability study, because it will be an air, land and sea capabilities discussion. And its results will have a dramatic impact on where we go in the areas where I am leading so that we have capability needs.

And the first one, in my humble opinion, is in the airlift world. We need to make sure that we meet at least the requirements of MRS-05 plus whatever Mobility Capabilities Study (MCS) lays on the table.

2005 told us at least 222 C-17s. It told us some number of highly modified C-5s. Both those programs are ongoing. The C-17 is funded up to 180. At 15 a year, that is taking us far too long to get to the solution to even a 54.5. And I would certainly like to see MCS come out with some data that we could lock our arms around and say, "That is the right answer for a C-17 buy."

The reason that is so critical to me is the line is due to shut down in 2008. If we do not have a long lead to keep that line open in the 2006 budget, the outcome is almost inevitable.

And so MCS will not be out in time to affect our budget bill. It will be in time for Congress to chew on that data. But I fear that we have to make some decisions, and that the next 42 in a multiyear would be a position that I certainly endorse. That is in the C-17 world.

In the C-5 world, we certainly need to continue the efforts to modify the A's and the B's, so that we end up with an airlifter there whose mission capable rates are at least the 75 percent the contract calls for.

Now, those are not competing programs. Those are both tools in the kit of mobility that we need as a nation to get a variety of things deployed. Where they come in competition is in the dollar end of it, but not in their capability.

So that is airlift.

On the tanker side, we are operating today with tankers last year that we never got to give. We were talking about tankers 43

years average age. Now they are 44.4 years average age. And if a decision were made today to replace them all and we were able to start today, the oldest tanker that would retire would be at least 80, and in some scenarios, as much as 100 years old. And that, as you would all appreciate, is like me having squadrons of Wright flyers on my installations today at 100 years.

And so a tanker replacement is an imperative to get started on. Regardless of what the solution is, there is a clear and well-known requirement to start recapitalizing our tanker fleet.

That is the air side of it.

Sealift, you have touched on some of it. We have 19 LMSRs. I would like to see us get up to that full surge capability so that we can rid ourselves of that roughly ten million square feet of shortfall and surge capability. That is in a roll-on/roll-off fleet.

I would further like to work with MARAD (Maritime Administration) to reduce our reliance on ships within the Ready Reserve fleet that are not militarily useful. And that is that category of ships that have either aged out or are break bulk and are certainly less optimum from a transportation perspective since they are break bulk and not containerized.

Most of what we do is either roll-on/roll-off or containerized today, and so there is a significant need in the sealift side.

The other part of sealift that I would certainly endorse to explore is not small intratheater high-speed lift but the possibility of increasing the speed of large ships in that LMSR range. Because one of these days, we are going to have to replace our fast sealift ships in the Ready Reserve fleet that are boiler-powered ships—great ships.

But they are aging out, and we need something that can get up into that 40 to 45 knot range and deliver the bang for the buck that we can today with an FSS (fast sealift ship) or an LMSR.

So that is sealift.

On the surface side ashore, we have done great progress since the days of Shield and Storm with rail-head rail improvements, flat car acquisition such that—and in containers by the way—such that we are reasonably well off in that area.

So that is air, sea and surface, from my perspective, that are things that need to be watched in that mobility capability study.

One final point: In looking at that study, it is critical that the assumptions in that study be critically looked at up front. And by that I mean that you can make some assumptions up front that may negate an outcome that takes you down a path that may not face reality.

And I can address those, if you are interested at all.

Mr. TAYLOR. Mr. Chairman, I would love to hear, but I do not want to monopolize the general's time, so I will yield back in hopes that at some point he can touch on those things.

Mr. BARTLETT. We will have a second round, if some other member does not touch on it with their question.

The chair will recognize our members in their ranking on the committee if they were here at gavel call and their appearance on the committee if they came in after gavel call, so that means Mr. Saxton is next.

Mr. SAXTON. You confused me with that formula, but that is okay, I will take my turn now.

General, in the chairman's opening statement, he talked about the airlift requirement. And he mentioned that at one time the airlift requirement was established at 49.7 million ton-miles per day. And that at a later time, after the mobility requirement study bottoms-up review, the requirement number was moved to 54.5 million ton-miles per day.

And I have to admit, you reminded me of this. I had forgotten where we were today, at 44.7 million ton-miles per day.

And I just would share with the other committee members who may not have been here or who may not have had this recollection, I remember when the C-17 was proposed, when it was in its developmental stage, we thought we were going to need, help me out, I think it was 220?

General HANDY. Two-hundred and forty was a figure that we had etched in stone at one time.

Mr. SAXTON. Right. And then it is my opinion that for budgetary reasons, Secretary Cheney decided that we would originally commit to buy 120.

And there was a lot of discussion on the committee about how to make 120 work. There was some discussion of extending the life of the C-141s, and that was deemed to be a bad idea because of the service time and the type of missions the C-141s flew. That would have been a very expensive proposition and, frankly, it is a small older airplane anyway.

And then we talked about what to do with the C-5s, which have a mission capable rate of—the B models, I guess, are 60 percent?

General HANDY. They have been in the mid to high 60s over the last roughly 12 months.

Mr. SAXTON. So we cut the buy of the C-17 in half and then added them back a little at a time when we found an excuse to do so. The first 15 we added back for special operations submissions, and then we decided that we were so short on lift that we added another buy.

But this seems like such a simple answer to me, and we keep making it complicated. We originally thought we needed 240. We have been adding them back whenever we can find an excuse to do so. And, General, it must make interesting time for you to hear us debate this issue. Eventually we are going to have to buy 240 C-17s.

So, anyway, that is my opinion, anyway.

Now, we have got some options here laid out in the mobility study 2005. And option number one, General, I am interested in your thoughts on this.

Option number one is to modernize, at least, part of the C-5 fleet at a cost of \$8 billion and to buy 60 C-17s to get us to where we need to be. Those two items together, that would get us to 54.7 million ton-miles per day. Is that right?

General HANDY. Each of those options discussed in MRS-05 or to get to 54.5 million ton-miles per day.

Mr. SAXTON. All right.

Mr. Chairman, did you not mention that there is some thought being given to increasing that 54.7 million ton-miles per day?

Mr. BARTLETT. This is moderate risk. And for those who would like to go into war without moderate risk it jumps up to 67—is it?

General HANDY. Yes, sir.

Mr. BARTLETT. Sixty-seven million ton-miles per day. You have to remember that this is moderate risk. And I do not know how many of our people really want their young people out there under moderate risk?

Mr. SAXTON. Option number two is to slow down the retirement of C-141s. Well, that may have been an option when this paper was written but they have been done retired. I think we have got nine left in the active fleet.

How many are left in the active fleet, General?

General HANDY. I will check sir, but there are probably eight or nine still at McGuire.

Mr. SAXTON. Right.

General HANDY. But they are leaving McGuire very, very fast.

Mr. SAXTON. That is true. So that is not really an option. There is another option here: increased use of commercial aircraft. We had that debate when we were trying to decide to whether to buy the C-17 or not. And I hope we do not have to relive that debate because the C-17 just flew circles around the commercial derivative.

Another option would be to reduce the airlift requirement. I do not think that is an option.

And another option is to accept less strategic airlift capability, which, if we think much about our national security, it is not really an option either.

So we are debating on whether to send \$8 billion to modernize the C-5 fleet and \$8.9 billion to buy 60 more C-17s. And I think we ought to get to that decision.

What do you think, General? Maybe that is not a fair question for me to ask you, but—

General HANDY. I almost feel like asking you to turn that cell phone back on again. It is time for that sort of music.

Mr. SAXTON. Yes, sir.

General HANDY. Clearly, I do not think it is prudent for someone in my position to not clearly articulate the requirement that this nation faces in terms of mobility. And so to some degree, there clearly is a need for specificity and clarity.

And I certainly want the mobility capability study to wind its course. But it will confirm that—I predict—that we have at least studied this a lot. It is prudent that we not buy any more C-17s than the nation needs.

We should not have any more LMSRs or fast sea lift ships than the nation needs. But we ought to have at least what we need.

The frustration comes not in what we do not buy, but the fact that when I sit down with, as I did last year at exact same time with General Tommy Franks, and we talk about the war plan that he needed to execute, and we in fact must negotiate the time and each component of that war plan, that we can get it delivered.

And he might say within 60 days. And I will say, “But, General, we cannot do that—air, land or sea—unless you can give me 75 days or defer these particular force packages that are less dear a little bit further out and we will get the real dear stuff up front.”

And so as a combatant commander charged with supporting all other combatant commanders, it is very, very difficult to be in that negotiating position all the time.

What is even worse is to be able to support General Franks, and now General John Abizaid. We do that really well, we make it look very, very easy, but we are in a constant negotiation with not only them, but all the other combatant commanders and all users of our goods and services around the world to negotiate how we can get the nation's work done.

And so that is the frustration we have as people in this business is that we do not have the tool kits in our tool bag sufficiently staffed with C-17s or tankers or shipping that we know we need to get the job done.

And so the only solution for us is at least get to the 220 that we know was validated in MRS-05 and start modifying C-5s to the tune that we know was validated back then and let this other study wind its course.

And so if it sounds like I am fairly passionate about it, I indeed am. I really and truly want to see us fix this problem.

Mr. SAXTON. Mr. Chairman, last year, when we marked up, you will recall I am sure that we pretty much tied the Air Force's hands on the C-5 issue.

Some of the older A models were going to be retired and, I guess, maybe they did get retired in this cycle.

General HANDY. We had permission to retire 14 this year.

Mr. SAXTON. And after that, you are tied——

General HANDY. Yes, sir.

Mr. SAXTON. You are tied up because we put a provision in forbidding any more retirements of C-5As, which, from my point of view was a mistake because we need to move on with the C-5 rebuild plan, which is the newer ones that can be rebuilt efficiently. And I hope we can take another look at that. I suppose that is something we can negotiate with the Senate because I think they were pretty interested in that.

So anyway, this is a set of issues that to me, as I look out at the need and the options to meet that need, well, it is an expensive but simple solution. And we keep debating, trying to find other ways to do this. And it is a bit frustrating from time to time.

The requirement to deploy Stryker brigades in 96 hours, a Stryker brigade in 96 hours, has that changed the lift requirement overall?

General HANDY. That is one area of MRS-2005. Of course it did not exist then and is an area that we have said you need to lay on the table as we look at the mobility capability study. What will it take to do what the Army needs to do and to have done today? What is that requirement? How many? Where?

We have had some notional looks. And the plan that we endorse is a quick thrust of Stryker with C-17 and then sealift for the remaining force that gets it closed not in a 96-hour window, but certainly fairly fast. But those are preliminary looks at how could we accomplish that challenge for the Army.

Mr. SAXTON. That was not in the previous mobility study——

General HANDY. No, sir, but needs to be a factor in the MCS that is about to take place.

Mr. SAXTON. Mr. Chairman, I guess I will pass for now and maybe give some other folks a chance to——

Mr. BARTLETT. Thank you very much, and we should have time for a second round.

The next in our queue is Mr. Kline.

Mr. KLINE. Thank you, Mr. Chairman.

Thank you very much, General.

I want to switch to a different look at this transportation thing. I am thinking back over the years that—well, in fact, let's go way back when we were involved in moving large amounts of troops and equipment in and out of Vietnam. We had Da Nang, we had Cam Ranh Bay, we had Tan Son Nhut, we had some runway and ramp capacity.

Certainly when we did Desert Shield and Desert Storm, there was a lot of concrete down there that was available.

But when we did Operation Restore Hope, going into Mogadishu, we were extremely limited in both available runways and certainly in ramp space and port capacity.

And as you are looking at the MCS, the new study, I trust that those issues are being addressed in that to make sure that we are doing everything that we can to be prepared to operate in Mogadishu-like environment where we do not have the big reception facilities.

Would you care to address that at all?

General HANDY. Well, I certainly would.

I should go back a long time. It does not seem quite that long ago that I was both at Cam Ranh Bay and Tan Son Nhut and doing many of the same things that you are referring to.

We did have a lot of concrete back then, and we had a lot of access.

I was the TRANSCOM J3, J4, for Mogadishu. And so I know from air, land and sea what we went through in that particular event.

And of course, I have been through various scenarios in the last 37 and a half years.

Afghanistan uniquely was even worse than Mogadishu in that it was totally landlocked. And so that further highlighted the challenges.

As we look at the attempts at MCS, our role will be to be a very active partner. There are the two co-chairs: the Joint Staff and OSD Program, Analysis & Evaluation (P,A,&E).

And of course we will play in that.

And of course we will urge that consideration be given to the access component of mobility, which is airports and seaports.

And how do you deal with anti-access strategies and scenarios? And in those rare occasions like Afghanistan, how do you solve the problem?

Now, we did and we certainly made it look very easy, but it was not.

Mr. KLINE. Well, I appreciate the answer.

And it is encouraging to know that it is an important part of the study. But it does worry me a little bit that we look at LMSRs, for example, you pointed out how long they are and how much draft

they have. And there are those places like Mogadishu where it is just you cannot get there from here.

And we need to make sure that we have enough diversity in our assets—I think the C-17 would certainly apply to that—that would allow us to get in.

I remember very well being on the ramp in Mogadishu and you could not move or breathe. You could not get another airplane in there with a crowbar. And if there was a hiccup when the C-5 kneeled or tried to unkneel, you had a real problem. And I watched as runways literally got chewed up and you could not use them anymore.

And it is hard to ever remember a day when I thought fondly about Da Nang, but I thought about how much concrete and runway space that we had there.

So I appreciate very much that you are doing that.

And one follow-up: We have discussed from the very beginning here—and it is an amazing feat what you and your troops are doing, as you have this largest troop movement since World War II going on.

Is access to the ports and runways and ramps sufficient to move at the rate you would like to move? Or is that a constraining factor?

General HANDY. The constraining factor for us has not yet been ports, either sea or air. Our greatest constraint has been that we are moving 250,000 in such a short period of time. And so we have pressed our commercial partners into service at incredibly high rates.

And we have literally unleashed everything that we have that can potentially haul passengers comfortably, reasonably comfortably, into that fray. And that means KC-135 tankers, configured. It means C-5s with the 75 seats and as much as we can floor load, you know, with airline convertible seats.

So we are throwing everything we can at this problem.

And so the constraint is clearly one of airlift, as opposed to access.

Now I would be remiss if I just did not point out that a good bit of this transition takes place at Kuwait International Airport.

And when you are transiting 3,000 to 6,000 troops at a day's time, in a 24-hour period, that is a huge challenge to the infrastructure of the airport and the onward movement and reception that the Marines, and Army, Air Force and in some cases the Navy see.

So I do not want to leave here thinking that those are not real challenges. They are superior challenges, but they are being worked in an incredibly fine way.

Mr. KLINE. Apparently they are, because it is not the constraining factor. It is the number of airplanes, the number of seats that is—thank you very much, General.

And I yield back, Mr. Chairman.

Mr. BARTLETT. Thank you.

We now move to our members in order of appearance after gavel fall.

Mrs. Davis.

Mrs. JO ANN DAVIS OF VIRGINIA. Thank you, Mr. Chairman.

And thank you, General Handy, for being here.

I was going to ask you what procurement challenges might lie ahead for Military Sealift Command, but I think we have heard that. It is sort of like at my house, my husband tries to take the cheap, easy way to repair something and we end up having to spend more down the road because we should have done it right to begin with.

But based on what I heard Mr. Saxton say, it seems to me that we just need to see what you need and bite the bullet and fund it and get on with it.

But I do want to specifically ask you your thoughts on what factors might affect the balance at Military Sealift Command with regards to leasing versus owning. And what are the possible consequences that we would see down the road?

General HANDY. I think the best way I can answer that question is: We have a requirement, at least an established requirement in the past that will be updated. And it is going to sound like a broken record when I keep talking about how desperate we are to get MCS completed. But that requirement will be more known just how short we are of sealift. And the ways that we can solve that run the gamut.

Clearly, one way is to own our own capabilities as we do with the LMSRs that we have already talked about.

The other way, of course, is for MARAD, the Maritime Administration, to acquire and continue to manage in the ready reserve fleet those types of ships that run the gamut of large to small, much like Mr. Kline's point. So we have a mix-and-match fleet which we can draw from.

The other way we do it, of course, is a robust U.S.-flagged capability, which gets back to Mr. Taylor's point. And were it not for the reauthorization of the Maritime Security Act last session that gives us authority that will start in 2006 for MSC reauthorization that keeps at least 60 ships with the U.S. flag, which will employ mariners, by the way, which we also are deeply in need of.

So it is the combination of some acquisition and on the leasing area where I have looked to MSC is that we actually rely on that U.S.-flagged fleet to allow us to charter or liner bits of a ship to get the job done. It is the combination of those two things.

Now, I think that your question is talking about do I lease or buy within my own organic fleet. I have not looked at the financial analysis recently enough to give you an honest answer. And I would be more than happy to take for the record and insert back for you a more detailed analysis of what MSC thinks lease versus buy might be in our organically held shipping.

[The information referred to can be found in the Appendix beginning on page 294.]

Mrs. JO ANN DAVIS OF VIRGINIA. Like my colleague over here, Mr. Taylor, I am very concerned about our industrial base and where we are going. I also have a keen interest in the Ready Reserve fleet. So I do not mind MARAD having ships there that are ready to go in reserve that are usable.

I do have problems with some of the ones that are there now, and I cannot imagine you would want to use them.

But I would like for you to take that for the record and get back to me.

General HANDY. Yes, ma'am.

I just would tell you the NDRF (National Defense Reserve Fleet) is something that we are on record as saying that at TRANSCOM we have no requirement for any of those ships whatsoever—no requirement whatsoever.

[The information referred to can be found in the Appendix beginning on page 294.]

Mrs. JO ANN DAVIS OF VIRGINIA. Thank you, Mr. Chairman.

Mr. BARTLETT. Mr. Abercrombie.

Mr. ABERCROMBIE. General, thank you for your excellent summary. Going back to your response to Mr. Taylor—and I wanted to take it up at that point—but ask you first, in regard to that very detailed summary that you made, the funding is not there, right?

You outlined what you believe is necessary. But the funding for that, either in this budget or proposed budget, essentially is unfunded, an unfunded need. Would that be a fair characterization?

General HANDY. The funded part of it, to be very clear, of course is the 180 buy of C-17s, which was the last multiyear authority. That is funded through 180.

Mr. ABERCROMBIE. I should have been more specific. I am referring now to the sealift side.

General HANDY. Okay. There is nothing in the Navy budget that I am aware of that targets any more of the sealift that we are talking about for surge capability within MSC's span of control.

Mr. ABERCROMBIE. Now, with the security program and so on, we have had, ever since I have been here—this is my 14th year now dealing with this—but one thing about hanging around long enough is, sometimes you learn something and you have it down pretty cold.

Now, we talked sometime back and for some period of time about charter and build, about trying to revive the American Merchant Marine and to put it on a basis that it would be in line with what I refer to as national security interests.

My own belief is, in terms of full disclosure—because I am not trying to lead you down a path, believe me, although you may be aware of my views on this—is that I consider maritime security national security and consider that a loan program or a program of some kind that would enable us to revive an American Merchant Marine would be in our national security interest.

Perhaps we could do it with a low loan program or something. You are familiar with the various schemes that have been put forward—and I use schemes advisedly when I say that—various scenarios have been put forward.

Now, I am not so much asking you whether you feel that that is something that needs to be done. I just put that forward for the chairman's consideration and for this Congress' consideration.

We have got to come to a conclusion on this fairly soon. With these kinds of deployments that are taking place now, we simply cannot rely on the system of transport that we have gotten away with so far. I am going to put it that way. I think we have gotten away with it.

In any event, your testimony, if I understood it correctly, to Mr. Taylor, was that there is a significant need currently unmet with regard to sealift in various forms, that if you could get and we could authorize and fund a system for addressing that, you think it would be in the nation's interest. Is that a fair summary?

General HANDY. It certainly is.

Mr. ABERCROMBIE. Very good.

Without going into the details of what that might be, maybe that is something we can talk about at another time, or maybe the chairman can take up.

You then said at the end of your response to Mr. Taylor—and I am paraphrasing here a bit—that there are related subjects with regard to unintended consequences or directions that might be taken that might be adverse in nature but did not have time to go into.

Could you illuminate that at this point?

General HANDY. And I am talking specifically about assumptions prior to a study. And it is not just MCS, it is any study that anyone undertakes, it is what sort of assumptions do you make?

And there are several assumptions that have been used in the past that we certainly have cause for concern. And I can lay out just a couple of very important ones. They tend to be assumptions with war-time scenarios which you then analyze, how would I execute that particular task.

If, for example, you assume presidential reserve call-up immediately, on initiation of conflict, that is an assumption that we have yet to see, but it is quite often put in scenarios. And the reason that is so critical is that if you assume you have that kind of manpower and you do not, you start out in a deep, deep hole.

So it is an assumption that we always watch out for early on. And any scenario that gets played in the mobility world is, well, why would you assume that, if the reality is that is not likely to happen for the most likely contingencies that you are going to undertake.

Another one that we watch very carefully is the assumption that you will go immediately on notice to CRAF (Civil Reserve Air Fleet) Stage 2. It has never been done.

And CRAF 1 has been used twice. And it is with incredible prudence that we use CRAF because we tend to get volunteerism early on in any scenario that gets quite a bit of capability into our toolkit. And we rely on CRAF activation virtually as a last resort depending upon how challenging the scenario is and how threatening the threat may be.

And so any hint that you are going to do some of the things automatically at initiation of a more typical crisis does not play well in a scenario that we see today. And the scenarios we are talking about are small regional contingencies as opposed to a all-out regional worldwide conflict.

And so those are the things that I am talking about: greater relying on CRAF or presidential reserve call-up, things that happen right away that in history we know just do not happen right away for a whole lot of reasons.

Mr. ABERCROMBIE. How do you relate that, then, to say the sealift lack that you see right now? So if you had your way—I was

going to say if you were being asked—I will ask you now not to commit yourself to anything but to be responsive to the question.

If you had your way right now with respect to sealift and did not have to concern yourself with the funding mechanism per se, what would you need today in the context that you just outlined, the most realistic assessment of what you face right now and likely scenarios with these possible multideployments and highly specialized kinds of contexts?

I am speaking about sealift now.

General HANDY. Yes, strictly on sealift, there are two areas I would look at right away and it would be right with MARAD and it would be right with the age of the RRF (Ready Reserve Fleet). So age is one thing.

Specifically, if you look at our fast sealift ships—and I mentioned them earlier—boiler plant power stations where if we really need to move something across the ocean fast—and that is happened multiple times in the last 24 months—we can put the throttles to them and scoot across the ocean, but at some significant risk to those power plants.

And so we try to throttle back. So we are trying to save that kind of lift.

The first thing would be the age of our RRF, which is that go-to force for immediate reaction.

There is an aging issue and there is that power plant issue.

Tied to that, of course, is the next concern, which is not directly at shipbuilding, but is the mariner issue you point out.

Without a strong U.S. flag fleet, the dwindling nature of our mariner pool continues in a spiral. And that is why getting from 47 to 60 ships was such a significant boon to us at TRANSCOM that it might enhance that mariner pool.

And so it is indirect, but those mariners are people that when we call the union halls, they show up, they roll up their sleeves, they get their anthrax and smallpox shots, and they go to sea and they do incredible things for us in great numbers.

But as our U.S. flag fleet faces the threat of a reduction, that is a direct hit against the very mariners that man our RRF ships. And these are great Americans who perform magnificently on the seas of the world.

And so sustaining mariners and sustaining adequate U.S. flag shipping in the commercial sector is the other area of greatest concern—age and a sustained U.S. flag fleet.

Mr. ABERCROMBIE. I appreciate your indulgence, Mr. Chairman and other members.

So if we found a way, then, to address that question in terms of funding, regardless of what that might be—I am not asking you for that—but that that would materially aid your capacity to be able to respond in the manner in which you already know how to do and feel we must be able to do; that is to say, addressing the mariner issue and the U.S. commercial fleet question, how to sustain it, or actually revive it I think is closer to it.

General HANDY. Totally agree.

Mr. ABERCROMBIE. Mr. Chairman, I have a question I would like to submit for an answer rather than take time now on the study assumptions.

And I believe the frame of reference is called "terms of reference," is that correct?

General HANDY. That is correct.

Mr. ABERCROMBIE. I do not know if we have time for that now, maybe another set. But could I submit that question for you to address, because I think that addresses your question of assumption.

Mr. BARTLETT. Absolutely.

I might note that because this an oversight hearing, there are a number of questions to which we really need to get answers. We will not have an opportunity to ask all of those questions in open session.

With your permission, General, we would like to submit to you—and any member of the committee may add to that list—questions that you need to answer for the record.

General HANDY. Absolutely.

Mr. ABERCROMBIE. Thank you.

General HANDY. Thank you, sir.

Mr. BARTLETT. Thank you very much.

Mr. ABERCROMBIE. Thank you, Mr. Chairman, and other members. I appreciate the time.

Mr. BARTLETT. Thank you very much.

Mr. Marshall.

Mr. MARSHALL. Thank you, Mr. Chairman.

General Handy, I cannot put a date on exactly when I submitted or my office submitted a series of questions concerning the use of foreign airlift capacity to support our forces generally during the last year or so when Operation Iraqi Freedom has been ongoing.

And I have not, to my knowledge, at least—and I may be mistaken about this—I have not received a response to that detailed list of questions. And I guess I just, for the record here, ask that we work through that and I get those responses. I am quite sure that—

General HANDY. We have incredibly good techniques for finding out where the logjams are and unjamming them.

Mr. MARSHALL. And I certainly hope it was not in my office. It may be that somehow this has come back. I apologize for not being here earlier. I was unavoidably detained and I have not had an opportunity to ask my office what is the status of that. But it has been really quite some time.

And obviously, all of us would be concerned if we were dependent upon foreign commercial carriers to meet needs. I understand that we contracted with Russia for a certain amount of carrying capacity airlift during that period of time.

And I am sure that for the sake of security of the United States, it would be best to be maintaining the capacity to meet all of our needs for the reasonable contingencies included in the future—maintain that capacity ourselves, rather than be relying upon foreign governments.

That is one of the reasons why I had that series of questions, and I would like to see exactly what the scope of that was.

General HANDY. I will certainly press back, because it is very disappointing if we have not been incredibly quick to answer your questions.

Mr. MARSHALL. And I hope it is not me.

General HANDY. A little insight. We have contracted foreign carriers, but we contract that because of reasonable laws, and laws that we certainly appreciate, through our craft partners. And in this case it is with a craft U.S.-owned company who has a subcontract relationship with a Ukrainian operator of the AN-124.

And so we do not contract with foreign governments under any circumstances, but we do access this capability, but only and only when we have exhausted every conceivable avenue of lift, either organic or commercial. And I really emphasize, it is an exhaustive process making sure that we just do not have anybody who can do what we need done.

And part of the problem was, early on and right now, the fact that Baghdad International and Iraq as a nation and Afghanistan are still off limits to U.S. flag carriers. We, in our organic fleets, with our defensive systems can fly into those environments.

And in some cases, our craft partner has a sub with that airline that could do that. And some very unique things that we needed moved at the time.

Mr. MARSHALL. Well, I am sure you all are doing absolutely the best you possibly can to contract only with U.S. carriers and to not be dependent upon a foreign government to provide us with the airlift capacity that we need in order to meet our strategic objectives.

The response you just gave concerns me a little bit. I really do not think it matters whether you are contracting with a U.S. company that happens to have a subcontract with a foreign country, and then we are in a position to say we have not contracted with the foreign country for airlift capacity directly.

It just seems to me that one lesson learned here may be that we need to rethink our airlift capacity and perhaps increase it beyond what we are projecting right now, so that we can meet the needs and not rely upon some foreign government to come through for us, whether it is with a subcontract or not.

General HANDY. I totally agree. Some of our earlier dialogue proves that point, just hands down. Given the adequate assets, we would be in a different position.

Mr. MARSHALL. Thank you, sir. Appreciate your service, and wish I had gotten here a little sooner.

Mr. BARTLETT. Thank you very much.

General, before turning to my colleague, Mr. Taylor, for questions of a second round, I would just like to ask you one brief question before we continue.

I am sure that in your war games that you have looked at a wide range of potential engagements from very small to very large. On that continuum, where would you place what we are doing in Iraq, on a scale of one to ten, from the smallest to the largest? How would you rank it?

General HANDY. It is an interesting question. And the reason I am somewhat smiling about that is that Afghanistan was the one place in the world that in every war game I have ever played in, when someone mentioned it, they said, "You will never have to go there, so pick another country."

And so what we are seeing is sort of our worst scenario is an Afghanistan, landlocked, without the capability for robust sealift at the start.

We have significant sealift in through Pakistan now. But that one scenario is the one that we had always been told to avoid because it just would not happen.

So if on a scale of one to ten, what we see is we are, I would in all sincerity say, it is in a 10-plus range. You did not give me that option, but it is about as extreme as we can get.

Mr. BARTLETT. It would be easier if we went to war with the Russians?

General HANDY. No, that is not what I mean. In most likely scenarios, if you want to—

Mr. BARTLETT. Oh, all right.

General HANDY. If you want to talk extremes, then, I mean, it is a—

Mr. BARTLETT. With the potential enemies, this is nowhere near a ten, correct?

General HANDY. Oh, no. This is in the most likely scenarios that we face today.

Now, if you take most of our studies and war games that look at an East and West scenario, where you have something like an Afghanistan or Iraq happening in Southwest Asia and you also have an East Asian scenario where our forces are split, that breaks the bank in terms of mobility.

We are not postured to handle that dual role.

And what we have said in the past and say today is we would have to fight one to a standstill and then go execute the other one in the traditional two-MTW (Major Theater War) construct. We are not in that construct today. But that is the most demanding scenario that we ever played.

Today's scenario gets us into multiple small-scale contingencies that are more like what I described with my first answer.

Mr. BARTLETT. And with just what we are doing now, you are stretched pretty thin.

General HANDY. We have virtually everything that we have at our fingertips, both organic and commercial air, in the fight today on the air side and not quite strained on the sealift side. In air refueling, we are back down to a more normal pace. And so that gives you a picture of where we are.

Mr. BARTLETT. And if there were a North Korea coincident with this, you would kind of be in extremis.

General HANDY. There is no question about it.

Mr. BARTLETT. The question I would like to ask is, your MRS study 2005 was done pre-9/11.

Clearly, our world changed. Do we need to have a relook at that to see what the daily ton mileages really need to be in the context of this new world we are in.

General HANDY. It is precisely the issue with that mobility capability study which is about to take place. They have to go back and revalidate what the real requirement is. And that number, 54.5, I am absolutely totally confident with the years I have been in this business will pale in comparison to what the reality of the world is that we live in today.

Mr. BARTLETT. Sixty-seven will not be too high?

General HANDY. We did a quick look study on just what we have just done in terms of Iraq and Afghanistan, and our best guess is

54.5 went up to somewhere in the 60 million ton-miles per day just in the scenario we have run.

And so if you get to a scenario like you are talking about, then easily one could say that 67, which was the highwater mark of low risk of MRS-05 could be exceeded.

Mr. BARTLETT. When you have completed the study, can you give us you needs in terms of low risk, moderate risk and high risk?

General HANDY. We will certainly do everything we can to make sure that when the OSD and Joint Staff agents work that study, that our part of it will be to drive them to those kinds of conclusions so that we can clearly articulate high, moderate or low risk and the MTMs (Million Ton-Miles) per day or millions of square feet per day that we can move by sealift.

[The information referred to can be found in the Appendix beginning on page 289.]

Mr. BARTLETT. Thank you. That would be very useful to us in our deliberations.

Mr. Taylor.

Mr. TAYLOR. Thank you again, Mr. Chairman.

General Handy, I remember, I think it was in late November or early December, the insurgents in Iraq were able to hit one of the DHL planes. Thank goodness it landed safely.

My question is: What if the Iraqis got as clever with missiles as they have obviously gotten with improvised explosives?

And what if a carrier like DHL said, "We won't do that anymore. You cannot pay us enough money to fly in there." What happens then?

What percentage of your total requirement is provided by outside contractors?

General HANDY. They were not under contract to us. They were operating independently. We have no commercial carriers of any kind going into Iraq or Afghanistan that are U.S.-flagged.

Mr. TAYLOR. How about foreign-flagged?

General HANDY. The Antonov 124 has made trips into Baghdad, and it is for that reason. No other people could do it, and so we went to them to solve that problem.

Mr. TAYLOR. What percentage of your total requirement is done by—minuscule? Less than 10 percent?

General HANDY. It would not even be the point of a pencil on a sheet of paper.

A critical part of your question, if I could, sir, is not only was the DHL hit, but so were one of my C-5s and one of our C-17s. And both of those occurrences happened shortly after the DHL incident.

And so it further points that in areas where man portable air defense systems (MANPAD) are used, that the commercial factor is taken right off the equation.

And so we are funneling our commercial traffic through alternate hubs, in this case, predominantly either Incirlik, for some of the retrograde, we haul things up to Incirlik, Turkey, and move out of there, or down to Kuwait International where that has been the hub and the heartbeat of all our commercial endeavor in the war to date.

Mr. TAYLOR. I notice that on page 30 of your testimony, you talked about the large aircraft infrared countermeasures. And I am

aware that a significant number of your air crews over there are Guardsmen and Reservists. And I regret that my comrade, Congressman Simmons, is not here. Because both of us have heard from our Guardsmen and Reservists that they felt like, in other fields, that they were not getting the same equipment that the regular force was.

So my question is: What percentage of the 130s in theater are now equipped with this? And is that pretty evenly divided between the regular force and the guard and reserve force over there?

General HANDY. The 130 fleet has no LAIRCM (large aircraft infrared counter measures) on it. It is a brand new system.

Mr. TAYLOR. None of them? None of them is what you are telling me?

General HANDY. Not no LAIRCM.

Every 131 in-theater has defensive systems, that is, radar warning and flare capability. And in fact, we have precluded any C-130, your specific question, from flying anywhere in either Afghanistan or Iraq without DS capability, defensive system capability.

In an air mobility command, there is no difference between active, Guard and Reserve with regards to equipment or training or standardization or inspections or TDY (temporary duty) rates.

We, by necessity, have everybody treated the same because it is the only way to go to war where it is a total team effort.

There are some exceptions in that the Guard units are equipped with more modern C-130s than the active component, but that is just a function of how those assets were bought.

Mr. TAYLOR. I noticed that you mentioned the high usage of the 130s, and just as a casual observer, I certainly noted their high usage in the theater.

And I saw where you were calling for the acquisition, I think, for, oh, about another 100, over 100 of them, over how many years, sir?

General HANDY. Right now the J model buy is a fixed program that we are not asking for any more. What we currently have authorized is exactly what we have decided we will need in the J model fleet. And we will go back and highly modify the remaining E's, H-1s, 2s, 3s, up to a common configuration in a program called Avionics Modernization Program.

The combination of those two will give us a common fleet for most aircraft and then the J model fleet that will flesh out in accordance with the current multiyear buy, which is—I do not recall the exact numbers—I think 45 aircraft still to acquire.

Mr. TAYLOR. I have been told—and I will let you tell me if there is any validity to this—that the weather radar on a J is actually inferior to previous models as far as a pilot being able to identify the most serious weather and, therefore, try to avoid it.

I would think that that is a problem that has to be overcome. And I was wondering, if that is indeed the case, what is being done to fix that?

General HANDY. It is one of the issues we have worked for some time between General Sherrard in Reserve Command and ourselves with the weather birds at Keesler.

The 241 radar that they have got installed is wonderful for normal routine flying to avoid weather. The problem with it is, in the hurricane hunter mission, you need to see not just that there is a

storm there, but you need the radar capability to penetrate that storm to tell you its intensity and when you will break out to the other side.

And the radar in the J model that came out for our crews at Keesler does not have the capability that they had resident in their current replaceable aircraft.

And so from the start, we have been working with the manufacturer, both the prime and the sub, to come up with a solution that we would be happy with because we are not happy until that challenge is solved.

Now, the latest I have been given on that solution is one that we are certainly hopeful will work. It is not currently identified, documented enough to put funds against it. But it is a software upgrade to the existing 241 radar—and that is just the nomenclature on it—that will give us that capability.

But I assure you we are Rottweilers on this and are not about to back off until we have the capability for those assets that we need for the obvious reasons of their primary mission.

Mr. TAYLOR. Stepping back one, is it your intention to equip the 130s in the Iraq theater with the Large Airframe Infrared Countermeasures?

General HANDY. Our intention is that we—

Mr. TAYLOR. And what is your time line for that?

General HANDY. Right. It is very extended, Congressman.

And the problem is, we have just come out of test. We know that LAIRCM works really good. I think we are up to about eight one-ball turrets.

I do not want to get too complicated here, but the whole system on an aircraft is one up each side of the nose and one on the tail. And that gives you full-spectrum capability.

An option that we have used with the C-17 because of the threat and the high capability of LAIRCM is to put the one-ball laser turret on the tail of a C-17, and that gives us about 70 percent coverage to detect and defeat IR (infrared) missile threats.

We are installing that as quickly as we can on C-17s. And that program, when the tests are completed on 130s, we will ramp into the C-130 as well.

Now, that is added capability. And we want to make sure that it really will do what we need it to do on the C-130.

And we want to make incredibly clear that it does what we need done on the C-17.

Right now the Air Force is supporting us with an aggressive buy and installation to move those programs from what would be right on a time sheet, back toward the left, to get them done sooner. And I would be happy to supply a time line for both C-17 and C-130s for you to see.

Mr. TAYLOR. General—okay, I am not pointing things—we, the Congress, the administration, the DOD, we screwed up on the body armor. And I think right now we are screwing up on IEDs (improvised explosive devices). And if I sure as heck six months from now find out that we are losing planes at a steady clip because we have not done what we needed to do on this draft, even though it had not been—thank goodness, we have not had many troubles.

As these guys continue and unfortunately seem to be getting more sophisticated, I think that is probably one of the next things that happens.

General HANDY. Well, clearly I emphasis one point: There are no aircraft flying in either of those theaters without defensive system capability. The issue is one of better capability that we are most anxious about and are pressing hard on.

Thank you.

Mr. BARTLETT. Thank you, we have about 15 minutes remaining and then we must adjourn because we have a full committee hearing that starts in 15 minutes.

General, while Mr. Langevin is preparing for his questions, let me ask you a couple of questions for extremely brief answers, as few words as possible, if you could, sir.

Why do we not have more U.S.-flag ships available? You do not need to be kind, just use as few words as you can. Is it because, sir, there just are not very many U.S.-flag ships?

General HANDY. We have made it so expensive for our U.S.-flag operators to operate in this country.

Mr. BARTLETT. Okay, so this is a matter of regulations?

General HANDY. It is taxes, it is regulations, it is salaries. There are a lot of metrics that go into why U.S. shipping is far more expensive than a foreign flag or a flag of convenience.

Mr. BARTLETT. From a national security perspective, do we need to take a look at this?

General HANDY. In my humble opinion, yes.

Mr. BARTLETT. Okay, thank you very much.

General, just one other question for a really quick answer, and then I will turn to Mr. Langevin.

The Army is configured so that it cannot fight without Guard and Reserve. Because it is not possible for a 19-year-old to have the kinds of skills and experience that a 39-year-old has, and so when they fight, they have got to activate the Guard and Reserve.

And now some of those have been activated for their second one-year stints since 9/11. And we have got to do one of two things: Either we have got to have different kinds of deployment in the future, or we have got to restructure the Army.

Because the Guard and Reserve are not going to re-enlist or they are not going to enlist at adequate rates to maintain them if we keep using them this way.

Is this also true of the Air Force? Do you have skills that are not available in the active forces so that you can only fight if you have activated Guard and Reserve?

General HANDY. In my area of responsibility, we have equal distribution of all career fields, talents and capabilities, so that we rely on them as volunteers or in a mobilized mode routinely.

We fly day in and day out. We are equally ready. Our reliance and team work with Guard and Reserve is absolutely optimum.

Mr. BARTLETT. So you activate Guard and Reserve only when you have exhausted the capabilities of the active forces, that you do not have to activate them because you have to have them in the mix to fight?

General HANDY. At the start of this campaign, that is exactly the rule we followed. When we exhausted the capability of an active

component, then we surgically called up our Guard and Reserve capability to fill that requirement.

As we have gone through time, the one area that we have had to break with that—and that is because of the time involved—is in the C-130 requirement, 64 aircraft in-theater, roughly 125 to 126 crews, and we have had to spread that throughout the entire C-130 force structure.

So that if you look at us today, we have some that have demobilized, but every single active, Guard or Reserve unit that has the capability has been in the fight.

Mr. BARTLETT. General, I know that you have an obligation to support the administration's budget. Might I ask, for the moment, to please ignore that responsibility and to tell us: Does the budget include the resources necessary to meet the apparent acute shortfall in airlift? Or do we need to do something different?

General HANDY. Clearly, I have been a proponent and will always be a proponent for more lift. And that is solving the problem with additional C-17s and modified C-5s. Those are the key solutions to solving—

Mr. BARTLETT. So the answer to my question is, if you can ignore your responsibility to defend the administration's budget that you would like to have more capability in those areas.

General HANDY. I would like that capability, and I would continue to insist on it. [Laughter.]

Mr. BARTLETT. Thank you very much, sir.

Mr. Langevin.

Mr. LANGEVIN. Thank you, Mr. Chairman.

I will not put as much pressure on you, General.

I have some questions that I will submit for the record, especially since I came late.

But one question I did want to ask and it entails what the chairman was just asking: I was wondering if you could describe for us what the impact of the Army's recently announced reorganization will have on transportation needs.

And is U.S. Transportation Command assisting in its plan in order to prevent possibly shortfalls in transportation capability?

General HANDY. I would tell you very succinctly that I am more than just a little bit excited about what the Chief of Staff of the Army, General Schoomaker, has for a vision, as well as what he has articulated openly since his taking over that job.

What he proposes—and certainly we support it—is a lighter, leaner, more lethal capability within the United States Army. And to that end we see a lot of capability in our hands to support the Army, even better than we have in the past.

I do not want to leave the impression that we are helping him in any way to create that vision or execute it, but we are certainly an active partner in how do you move that force, how do you plan to engage that force in the areas that we can be helpful.

Mr. LANGEVIN. So you believe the U.S. is sufficiently involved and being consulted with.

General HANDY. Absolutely.

Mr. LANGEVIN. Okay, thank you.

General HANDY. Thank you, sir.

Mr. LANGEVIN. I yield back, Mr. Chairman.

Mr. BARTLETT. Thank you very much.

Mr. Saxton, additional questions?

Mr. SAXTON. Yes, sir, just one small item.

I would just like to try to make a point, General.

You mentioned refueling tankers. When you mentioned that the KC-135s are little over 44 years old, let me ask you: When did we buy the KC-10s?

General HANDY. I would have to look back, sir. In the 1980s, I want to say.

Mr. SAXTON. I know we had them in 1993.

General HANDY. Yes. It was at a time where that was an option offered to us, and it was a reasonable thing to do, and I just do not recall the exact date.

Mr. SAXTON. At that time in the 1980s, would it be fair to say that the main mission of the KC-135s and the KC-10s was fighter support?

General HANDY. At that time most of the requirement was in fighter and bomber support.

Mr. SAXTON. I should have said strategic.

General HANDY. Right, and then some lift. Because the 141 had rather sizable air refueling requirements at the time as well. But they were fighter drag capability, the KC-10 especially.

Mr. SAXTON. But here is what happened. We have got this inventory of 44-year-old airplanes now, which existed then. And we have got KC-10s, which were new then. They are no longer new today, and so the mission capability must be somewhat different today than it was then.

And our main use of them was for strategic and fighter support and some 141 support.

Then we decided to bypass, on the way to the fight, our European airports. And we built something called an air bridge. And that was a new requirement, was it not?

General HANDY. Absolutely.

Mr. SAXTON. And then in 1987, we stood up AFSOC, the Air Force Special Operations Command, and that was a new requirement. Is that fair?

General HANDY. Small.

Mr. SAXTON. And more recently, in your testimony, you talk about the number of missions that we have flown in CONUS (Continental United States) supporting air CAPS (combat air patrols). And that was a brand new mission.

So we have got the same inventory of airplanes that we had when we were supporting fighters and bombers and some 141s now doing the air bridge which is I think a very sizable addition, AFSOC (Air Force Special Operations Command) and CONUS CAPS.

Now, how long can we do that?

General HANDY. That is a question I ask folks around me on a routine basis, Congressman.

It is that omnipresent concern that we have a fleet of aircraft whose depot costs have gone up exponentially in the last 10 years, whose challenges as we maintain them have gone up in an equal measure, as you point out, 44.4 years of age on average.

It is a fleet in the E model that is about 130 aircraft.

In my world, I have always suggested to the planners that we retire at least the E's as soon as possible and allow us to trickle down—by the way, they are in the Guard and Reserve only. And I would like to take our models out of the active component and put them in those units and give us all the same capability and accept that roughly to 3 to 5 percent delta in capability because we retain the manpower and increase the crew ratio.

Those are the kinds of things that I turn to the staff and say, "Why aren't we doing—why can't we do this?"

And we have the same restrictions on the E model 135s as we do on the A model C-5s.

Mr. SAXTON. Obviously, one of the things that we need to spend some time working on is how to get some more tanker capability. And the so-called lease deal is one of the options, I guess.

Is that moving at all? Or is it still hung up in the other body?

General HANDY. The last time I had any kind of update on the lease was that it is still on hold by secretarial designation until all of the investigations and new studies get complete.

Mr. SAXTON. Okay, Mr. Chairman, thank you.

Mr. BARTLETT. Thank you.

We must adjourn momentarily for our next full-committee hearing.

But, Mr. Abercrombie, do you have a follow-up question? You are okay.

Mr. ABERCROMBIE. Well, for the record, if you would care to: Do you have an opinion on charter and build as a concept? And as possibly a useful response in the context of the chairman's question, I would be glad to receive it. I do not think that you have to be speaking for the administration or anything else.

But on the charter and build concept, I would really be pleased, and I think it would help the chairman with his question about what we need to do and what we need to consider.

General HANDY. I would be happy to do that.

Mr. ABERCROMBIE. Thank you, Mr. Chairman.

Mr. BARTLETT. Thank you.

Thank you very much, General. Thank you for the time you have spent with us.

General HANDY. Thanks so much.

Mr. BARTLETT. We are in adjournment.

[Whereupon, at 5:30 p.m., the subcommittee was adjourned.]

A P P E N D I X

MARCH 17, 2004

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

MARCH 17, 2004

**Statement of the Honorable Roscoe Bartlett
Chairman, Subcommittee on Projection Forces**

Airlift and Sealift Hearing

March 17, 2004

This afternoon the Projection Forces Subcommittee meets to receive testimony from General John W. Handy, United States Air Force, Commander of the United States Transportation Command. Our hearing today will focus on the current and future state of our airlift and sealift transportation forces.

Over the past ten years, the United States has reduced its Cold War infrastructure, and closed two thirds of its forward bases. This means that to maintain the same level of global engagement, U.S. forces must deploy more frequently and over greater distances.

During an average week, the United States Transportation Command, or USTRANSCOM, operates air mobility missions transiting 52 countries, operates in 22 military ocean ports in 13 countries, and has 20 chartered military ships underway. Thirty-six additional government-owned and chartered vessels, loaded with military cargo, are strategically pre-positioned around the

world, significantly increasing the responsiveness of urgently needed U.S. military equipment and supplies during a time of crisis. During peacetime, USTRANSCOM frequently finds itself operating at levels during day-to-day operations that closely parallel those of a contingency.

Today, we are engaged in contingency operations. USTRANSCOM is the key enabler, ensuring that combat forces and equipment are available to support Operations Enduring Freedom and Iraqi Freedom. In fact, Operations Enduring Freedom and Iraqi Freedom now rank as the largest passenger airlift in history. Only the Berlin Airlift exceeds it in terms of the number of missions and tonnage flown. It's important to note that TRANSCOM currently combines these wartime missions with other worldwide war on terror operations such as support for detainee operations in Guantanamo Bay, additional contingency and peacekeeping operations around the globe, and exercises which are vitally important to keep our forces trained and ready.

In the 1990's the Department of Defense undertook a series of studies to quantify requirements and identify shortfalls in the Department's wartime transportation needs. After some refinement of earlier studies, the most recent study, Mobility Requirements Study 2005, or MRS-05, was completed in 2001. This analysis concluded that pre-positioning, surge sealift, inter-

theater lift, and continental United States transportation assets are largely satisfactory, but the earlier airlift requirement of 49.7 million ton miles per day needed to be raised to 54.5 million ton miles per day. Although some MRS-05 scenarios generated airlift requirements up to 67 million ton miles per day, the Joint Chiefs of Staff and Theater Commanders agreed that the requirement for 54.5 million ton miles per day would be the minimum moderate risk capability to support the National Military Strategy. I am particularly concerned about today's airlift force structure since our current airlift force provides only about 44.7 million ton miles per day—a shortfall of 9.8 million ton miles. Additionally, I note that MRS-05 study was conducted before September 11, 2001, and our airlift and sealift needs for the on-going global war on terror have not yet been fully assessed.

General Handy, we look forward to your testimony today to help us understand the current status and future requirements of our airlift and sealift transportation forces as we continue the Global War on Terrorism.

I would now like to recognize the gentleman from Mississippi, the Ranking Member of our Subcommittee, Gene Taylor, for any remarks he would like to make.

(Back from Taylor)

Before we begin, without objection, General Handy your testimony will be accepted for the record.

General Handy, the floor is yours.

FOR OFFICIAL USE ONLY
UNTIL RELEASED BY THE HOUSE ARMED SERVICES COMMITTEE

Statement of
General John W. Handy, USAF
Commander, United States Transportation Command



Before the
House Armed Services
Projection Forces Subcommittee
On the State of the Command

17 March 2004

FOR OFFICIAL USE ONLY
UNTIL RELEASED BY THE HOUSE ARMED SERVICES COMMITTEE

INTRODUCING THE UNITED STATES TRANSPORTATION COMMAND(USTRANSCOM)

As we enter a new year, our nation remains globally engaged with terrorist entities whose stated aims continue to threaten the freedoms we, as Americans, all know and cherish. United States military forces remain deployed worldwide to combat this menace. Simultaneously, we are engaged in monumental nation-building efforts in Southwest Asia, multiple peacekeeping operations in locations worldwide, and on guard against a continued threat on the Korean Peninsula. The heavy demands on American forces highlight the dangerous and unstable world environment existing today.

As a combatant command uniquely structured to execute a global mission, USTRANSCOM provides air, land, and sea transportation for the Department of Defense (DOD), in peace and war. USTRANSCOM provides the synchronized transportation and sustainment which makes possible projecting and maintaining national power where needed, with the greatest speed and agility, the highest efficiency, and the most reliable level of trust and accuracy. To accomplish USTRANSCOM's day-to-day joint mission, we rely upon our component commands: the Air Force's Air Mobility Command (AMC), the Navy's Military Sealift Command (MSC), and the Army's (Military) Surface Deployment and Distribution Command (SDDC) (formerly known as the Military Traffic Management Command). The component commands provide mobility forces and assets in a force structure supporting a seamless transition from peace to war. USTRANSCOM functions as an integrated team, focusing the total synergy of the entire Defense Transportation System (DTS), including both military and commercial transportation assets.

USTRANSCOM's imperative is to provide consummate support to the warfighter. Simply put, we have three wartime mission objectives:

1. Get the warfighter to the fight.
2. Sustain the warfighter during the fight.

3. Bring the warfighter home after the fight.

Today's regional combatant commanders rely more heavily than ever on the strenuously tasked mobility forces as the number of missions and challenges facing them continues to increase. It is important to note that USTRANSCOM is only postured--from a force structure perspective--as a one major war force. Regardless, USTRANSCOM supports not one, but all other combatant commanders simultaneously, placing a premium on our lift assets. Additionally, USTRANSCOM's ability to support multiple competing demands is constrained by access and force flow dynamics. Our limited transportation assets rely on an optimized force flow to meet demands. In a dynamic political-military environment, requirements can quickly exceed capabilities.

USTRANSCOM's approach to posturing and improving itself to meet DOD's demanding distribution mission today and the increasing demands of tomorrow requires flexibility. Three themes guide our course:

- *Theme One:* Investing in the care and quality of USTRANSCOM's most valuable resource--its people.
- *Theme Two:* Continued transformation of key processes leveraged by Information Technology to provide seamless, end-to-end distribution management for defense.
- *Theme Three:* Maintaining readiness and modernization to perform our global mobility mission.

USTRANSCOM in 2003 and 2004

The operational tempo (OPTEMPO) inherent in the build-up and execution of Operation IRAQI FREEDOM (OIF), the continued prosecution of Operation ENDURING FREEDOM (OEF), and the ongoing support to Operation NOBLE EAGLE (ONE) made 2003 a challenging and truly rewarding period in USTRANSCOM's history. The statistics are mind-boggling: between September 2001 and February 2004, USTRANSCOM moved 3,072,471 short tons of cargo, 1.79 billion

gallons of fuel, and 1,189,968 troops in support of OEF/OIF. Here is the big picture - in the largest and most demanding test of our total lift capability since Operation DESERT SHIELD/DESERT STORM, USTRANSCOM delivered the necessary combat power to Iraq faster and more efficiently than ever before. The men and women of USTRANSCOM, in concert with our Service partners and commercial teammates, have performed brilliantly.

Our military's freedom to operate overseas is possible only through the continued defense of our homeland, and USTRANSCOM remains an integral part of that defense, as it has been since the terrorist attacks of 11 September 2001 (9/11). AMC KC-135 and KC-10 air tanker aircraft, representing Active Duty, Air Force Reserve, and Air National Guard assets, have continuously supported Air Force combat aircraft patrolling the skies of the Continental United States (CONUS) in support of ONE and other routine duties.

AMC tankers flew 1,704 missions refueling 3,684 receivers while supporting combat air patrols over our major cities and sporting events, continuing one of the highest air refueling operational tempos ever experienced within CONUS. Over 75 percent of these were Air Force Reserve and Air National Guard missions flown by volunteer "citizen-airmen." Additionally, while today's actual number is classified, I can tell you that the majority of the airlift on alert to respond to any United States Northern Command (USNORTHCOM) deployment order belongs to the Air National Guard and Air Force Reserve. Since the beginning of FY03, USTRANSCOM aircraft have carried 1,618 passengers and 461 short tons of cargo in the course of 29 airlift missions in support of ONE.

While concurrently providing global support to all combatant commands, we focused considerable effort and assets toward ensuring the successful execution of OEF/OIF. OEF/OIF now ranks as the largest passenger airlift in history. Only the Berlin Airlift (1948-49) exceeds it in terms of number of

missions and tonnage flown, with OEF/OIF airlift moving 882,609 short tons of cargo to date.

Airlift played an integral part in expediting critical shipments and facilitating force maneuver. A spectacular example of this capability began on the night of 26 March 2003, when AMC C-17 aircraft successfully airdropped 1,000 paratroopers of the Army's 173rd Airborne Brigade into Northern Iraq to bolster anti-Saddam Kurdish forces after Turkey's refusal to permit the U.S. use of ports and forward bases. This was the largest air insertion since 1989's Operation JUST CAUSE in Panama. Subsequent to the airdrop, C-17s executed a larger movement over five evenings, flying 62 missions from Italy into airfields in Northern Iraq. They deployed 2,000 additional troops, more than 400 vehicles, and 3,000 short tons of supplies and equipment, solidifying coalition combat power on the northern front.

AMC air tanker crews were instrumental in the initial success of OIF operations, completing 2,000 refueling missions through 1 May 2003 in support of strategic airlift and inter-theater deployments. To date, AMC KC-135 and KC-10 crews had completed 4,768 refueling missions in support of United States Central Command (USCENTCOM) operations. Tanker assets under the operational control of USCENTCOM amassed over 9,000 sorties with more than 40,000 receiver contacts, offloading over 475 million pounds of fuel through the end of the fiscal year to sustain critical CENTCOM warfighting operations. Additionally, OEF support in the United States Pacific Command's (USPACOM) area of responsibility (AOR) accounted for an additional 163 air refueling missions.

During the build-up for OIF, USTRANSCOM planners focused on maximizing the utilization of sealift whenever possible and avoided the reliance on airlift that characterized the initial phase of OEF in 2001. The total sealift tonnage greatly surpassed the tonnage airlifted to Southwest Asia in support of OIF. With the cooperation of USCENTCOM leadership, USTRANSCOM

achieved a more effective balance between airlift and sealift in guiding mobility operations. This collaboration, combined with the skills of SDDC port managers and MSC vessel operators, resulted in the deployment of 910,000 short tons on 155 voyages between December 2002 and 1 May 2003. From 1 May 2003 to date, an additional 68 voyages brought over 433,000 short tons to Iraq and the surrounding area for a grand total of over 1.3 million short tons delivered via sealift. Some 76 voyages redeployed more than 556,000 short tons during that same period. By striving to leverage sealift first in deployment operations, USCENTCOM and USTRANSCOM took advantage of a sealift fleet greatly expanded and modernized since 1991.

In striking contrast to past practice, we successfully implemented a "force packaging" strategy during OIF that synchronized the movement of combat-ready modules of unit equipment ("force packages"). This strategy allowed units like the Army's 101st Airborne Division to quickly and coherently assemble upon debarkation overseas. SDDC loaded the entire division, nearly 4,000 vehicles and 250 helicopters, on only five vessels that offloaded overseas in just a 12-day period, adding striking power to the combatant commander's arsenal in a fraction of the time required during Operation DESERT SHIELD/DESERT STORM. It ensured the integrity and rapid availability of a combat-effective fighting force far faster than the prior piecemeal movement of unit equipment.

USTRANSCOM relies on its commercial transportation industry partners and associated labor organizations to provide significant transportation capability during contingencies. OEF and OIF are no exception. Participation by commercial passenger airline and maritime companies gave AMC, MSC, and SDDC a vital extra edge in moving forces and equipment to support operations in Iraq. Chartered aircraft moved 78 percent of deploying troops during the build-up and 85 percent of deploying troops during the major combat operations. On 8 February 2003, 51 passenger aircraft from 11

commercial companies activated under Stage I of the Civil Reserve Air Fleet (CRAF). CRAF aircraft deployed 254,000 troops on 1,625 missions through 18 June 2003 when the aircraft were deactivated. Similarly, the number of ships under MSC's operational control supporting sealift operations jumped from a "normal" of approximately 22 ships to a peak of 127, including 40 government-owned ships from the Maritime Administration's (MARAD's) Ready Reserve Force (RRF). This transition from a peacetime environment to a contingency footing enabled USTRANSCOM to deploy the military equipment and supplies needed to support OEF/OIF operations. In fact of the total 1,189,968 passengers moved during OEF/OIF, 75 percent were moved by commercial means, and 25 percent by organic airlift.

The Large Medium Speed Roll-On/Roll-Off (LMSR) vessel emerged as USTRANSCOM's strategic sealift success story. Procured based upon the lessons of Operation DESERT SHIELD/DESERT STORM, 18 LMSRs completed 38 total voyages during initial OIF deployment operations, lifting more than 5.3 million square feet of cargo. This was approximately 26 percent of the total requirement. By comparison, one LMSR in OIF carried the equivalent of six commercial charter ships during Operation DESERT SHIELD/DESERT STORM. From another perspective, it requires 300 C-17s to deliver the amount of cargo carried by one LMSR. Of the 3.1M short tons moved during OIF/OEF, 74 percent was moved by surface, 26 percent by air (past 6 months, 85 percent moved by surface, 15 percent by air). Of that 74 percent moved by surface, 37 percent was moved by commercial charter and liner service.

The intensive combat operations experienced during OIF significantly increased the patient movement OPTEMPO in the USCENTCOM AOR. USTRANSCOM's Joint Patient Movement Requirements Center (JPMRC) originally deployed to the theater supporting OEF. There they performed as a patient movement management cell coordinating the movement, aeromedical and otherwise, of sick and wounded personnel from the AOR to higher levels of care in Europe and the

United States. The JPMRC maintained 100 percent in-transit visibility (ITV) of patients entering the patient movement system via the TRANSCOM Regulating & Command and Control Evacuation System (TRAC2ES). Coupled with the ability to utilize aircraft within the theater of operations or in-system to quickly respond to casualty movement requirements, aeromedical evacuation (AE) forces have successfully moved over 17,000 patients from the USCENTCOM area of operations to date. The JPMRC ensured the most seriously ill or injured individuals quickly reached higher-level medical care. More than 9,800 of those movements occurred between 19 March and 30 September 2003, with a total of 1,993 patient movements during the 42 days of major OIF combat operations, 19 March through 1 May 2003. Not a single patient died while in the capable hands of USTRANSCOM's AE professionals during that period.

Additionally, TRAC2ES has become the centerpiece of homeland defense patient movement planning. With "lift-bed planning" capability, TRAC2ES is key to managing large numbers of casualties that might occur during natural disasters or terrorist attacks. Further development is planned to integrate TRAC2ES fully within the National Disaster Medical System.

USTRANSCOM continued its contributions to the OEF-related detention of large numbers of al-Qaeda, Taliban, and other detainees at Guantanamo Bay, Cuba detention facility in support of the United States Southern Command (USSOUTHCOM). USTRANSCOM airlift missions sustained detention operations through the movement of over 7,000 passengers (U.S. military personnel as well as over 100 detainees) and 133 short tons of supplies throughout the fiscal year. Detainee missions required intense security methods and the support of 45 air refueling missions to move to and from Guantanamo Bay. In a twist from the previous year, these missions included the repatriation of detainees released from the facility once it was determined they no longer posed a threat to U.S. interests. With the significant numbers of detainees remaining at Guantanamo Bay, we continue to transport necessary supplies and

equipment via barge from Jacksonville, Florida, averaging 440 short tons per week.

Despite the extraordinary focus required to conduct support operations for ONE/OEF/OIF and other contingencies, USTRANSCOM continued to support the rotation of U.S. forces participating in other contingency and peacekeeping operations around the globe. Prior to the completion of Operations NORTHERN and SOUTHERN WATCH at the initiation of OIF combat operations, USTRANSCOM delivered over 13,400 passengers and 3,300 short tons of cargo via airlift to locations in Turkey and Kuwait. In Kosovo (KFOR) and Bosnia (SFOR), a combination of commercial and organic airlift transported more than 18,000 passengers and 1,080 short tons of cargo to and from the area. Meanwhile, surface and sealift components loaded and transported another 5,040 short tons in support of these long-standing operations. Additionally, from July to September 2003, USTRANSCOM airlift elements delivered 764 passengers and 798 short tons of cargo to Senegal in support of Liberian peacekeeping operations.

USTRANSCOM continued support to over 130 Combatant Command and Joint Staff-sponsored exercises during FY03. These are some of the more notable ones. From February through April of 2003, USTRANSCOM supported the Reception, Staging, Onward Movement, and Integration (RSOI) Exercise in the Republic of Korea via the airlift of 5,805 passengers and 597 short tons of cargo, and the sealift of an additional 715 short tons. From February through July of 2003, USTRANSCOM supported Exercise COBRA GOLD in Thailand through the airlift of 11,166 passengers and 784 short tons of cargo, and the sealift of 21,142 short tons of supplies and equipment. From June through September 2003, USTRANSCOM assets once again supported deterrence on the Korean Peninsula, this time delivering 6,922 passengers and 615 short tons of cargo via airlift, and an additional 3,614 short tons of equipment via sealift for Exercise ULCHI-FOCUS LENS (UFL).

The Command also actively participated in the planning and execution of several other key exercises instrumental to improving DOD's ability to deploy and sustain forces. Exercise TURBO INTERMODAL SURGE (TIS) exercised deployment of unit equipment from home station to deployed locations using commercial intermodal container systems and container ships. Exercise TURBO CONTAINERIZED AMMUNITION DISTRIBUTION SYSTEM (CADS) exercised the movement of containerized munitions from CONUS depots to installations overseas using commercial and DOD intermodal systems. Finally, Exercise JOINT LOGISTICS OVER-THE-SHORE (JLOTS) demonstrated the capability to offload/onload vessels off-shore for deployment/sustainment operations in a port-restricted environment. JLOTS techniques and equipment utilized in Kuwait in support of OIF were key to the successful deployment of munitions and sustainment cargo, providing a ready solution to the restricted port environment encountered there.

Not all operations were contingency or exercise-focused. AMC aircraft flying in support of Operation DEEP FREEZE, the ongoing National Science Foundation (NSF) research program in Antarctica, delivered a total of 7,802 passengers and 2,310 short tons of cargo. Four MSC-chartered vessels delivered an additional 12,745 short tons of dry cargo and 14 million gallons of fuel for the NSF community. As a side note, USTRANSCOM fully supports the United States Coast Guard's (USCG's) efforts to enhance its ability to maintain the sea ice channel to McMurdo Station through reliability improvement and service life extension projects for its aging Polar Class icebreaker fleet. These two vessels, the United States Coast Guard Cutter (USCGC) Polar Star and USCGC Polar Sea, are critical to keeping the vital sea lines of communication for sustainment open to Antarctica.

Humanitarian relief operations on Guam after Super Typhoon Pongsona in December 2002 required a mixture of 24 military and commercial airlift missions to deliver 108 passengers and 1,165 short tons of humanitarian

relief supplies. In February 2003, USTRANSCOM supported recovery efforts after the tragic Space Shuttle Columbia mishap via six total airlift missions. Finally, in October 2003, AMC C-130s configured with the Modular Airborne Fire Fighting System performed 60 drops (over 16,000 gallons of retardant) to help extinguish the California forest fires, preventing further loss of lives and property in the region.

USTRANSCOM also continued high priority and time sensitive airlift support for the President of the United States. AMC aircraft completed a total of 234 airlift missions in support of the President, flying the Commander in Chief to Mexico, the Azores, Northern Ireland, Europe, Southwest Asia, Africa, the Western Pacific, the United Kingdom, and Iraq.

People: USTRANSCOM's Greatest Asset

To meet America's transportation challenges, USTRANSCOM must first continue to develop and retain a talented and motivated mobility team. USTRANSCOM's strength, readiness, and warfighting capability depends upon these exceptional people and their extraordinary efforts to execute USTRANSCOM's global mission every day. Throughout DOD, we must remain sensitive to pay and quality of life issues and their associated effects on our service members. Meeting the needs of our people leads to increased readiness and higher retention and is absolutely the right thing to do.

In addition to compensation considerations, OPTEMPO, personnel tempo, and increased home station workload are other factors that negatively impact our retention efforts. Our personnel spend a great deal of time away from home. Those not deployed must work harder to compensate for deployed personnel and training time lost to previous deployments. Our peacetime workload is often as heavy for active duty personnel as wartime, and is even more arduous for our guardsmen and reservists. They must balance high OPTEMPO demands with the stresses of civilian careers. USTRANSCOM and our components have taken steps, such as using Army National Guard security forces to augment base

security, to mitigate the effects of the unprecedented peacetime OPTEMPO. We are taking additional measures, such as increasing support manning and aircrew-to-aircraft ratios to the new levels required. Nevertheless, many members are leaving for more stable and predictable civilian careers. Now is the time to correct the people-to-mission mismatch.

Another USTRANSCOM area of concern is the availability of a sufficient number of qualified civilian mariners willing and available to fulfill the additional requirements created by the activation and long-term operation of MSC and MARAD surge sealift vessels. Volunteer commercial mariners crew the surge vessels. The decline in U.S. flagged fleet size, increased training requirements, and more attractive shore-side employment have led to a decrease in the number of fully qualified mariners. Fortunately, mariner availability was sufficient to consistently ensure on-time vessel activation of the 50-plus ships supporting OEF/OIF, to include Fast Sealift Ships (FSS), LMSRs, a hospital ship, and numerous MARAD RRF ships. Since the entire surge fleet was not activated and because no wholesale crew rotations were required for OEF/OIF, there remains uncertainty regarding the ability of the maritime industry and maritime labor unions to produce an adequate number of fully trained and qualified mariners to fulfill the additional requirements created by the full activation of all MSC and MARAD surge vessels for a prolonged period. However, in the future, there are no guarantees that sufficient mariners will be available when needed.

USTRANSCOM, MSC, SDDC, and MARAD support the maintenance of a viable U.S. mariner pool through enforcement of cargo preference requirements, support for the Maritime Security Program (MSP), and vigorous maritime training and education. MSC has initiated a collaborative effort with USTRANSCOM and MARAD, in concert with the maritime industry, to revalidate and compare the peacetime/wartime requirements of mariner qualifications and availability in order to specifically identify potential shortfalls. Initial comparison of

requirements against qualified mariners indicated potential shortfalls of certain unlicensed mariners during a worst-case scenario if all surge assets are activated for the long term (i.e., greater than six months), requiring a full rotation of all crew billets. Further, MARAD's 2002 Mariner Survey regarding mariner "willingness and availability" to sail when requested also predicts potential shortfalls in both licensed and unlicensed mariners during a worst-case scenario. As a result, we continue to urge the Administration and Congress to support programs to promote the expansion of the U.S. merchant mariner pool.

Support for our people is required in other areas as well. The increase in the Basic Allowance for Housing (BAH) in the past few years, brought about through DOD's Housing Requirements and Market Analysis Program and BAH Initiative, has had an extremely positive impact on the quality of life of our military members and their families. With these recent BAH increases, more service members are finding it easier to locate affordable housing within their local areas. Continued Congressional support to ensure out-of-pocket expenses are eliminated will help more service members locate affordable and suitable housing within their communities.

The movement of service members' personal property in conjunction with their reassignment is a major quality of life issue. SDDC is currently developing the Families First Program, a comprehensive plan to significantly revamp DOD household goods movements beginning in October 2005. A significant change for service members under Families First is their empowerment to determine which quality carrier will accomplish their particular move. SDDC's method of distributing household goods traffic to carriers will be based 70 percent on customer satisfaction and 30 percent on cost, rightly placing the needs of the service member first. Another advantage under the program is the inclusion of Full Replacement Value (FRV) for loss or damage to personal property transported at Government expense, a

significant quality of life enhancement. Section 634 of the FY04 Defense Authorization Act provides DOD with the authority to contract with industry for FRV. Currently, agencies do not pay their employees or military members for loss and damage beyond a depreciated amount established by claims service regulations. As a result, personnel who are frequently required to relocate their families suffer from aggregate effects of uncompensated losses to their families' possessions during the period of their government or military service. SDDC will continue partnering with industry and the Services to ensure further progress on this significant issue.

Recent command headquarters restructuring efforts, both at USTRANSCOM and within our component commands, have led to numerous personnel placement actions and other transition requirements. Mindful of the turmoil such events can have on individuals' lives, both military and civilian, USTRANSCOM is working to ensure all affected employees receive the level of transition assistance, training, and placement options they require to continue their government careers successfully or transition to the private sector. We must be particularly mindful of the value of our civilian employees. Increasingly, we rely on civilian employees to make informed decisions and take decisive actions in regard to evolving missions in the War on Terror (WOT). Motivated and talented people are key to our success, and thus we must attract and retain the best civilian personnel, whether they ultimately remain within the USTRANSCOM family, or contribute elsewhere within the government at large.

Together, Congress and DOD have made great strides in our people programs. This year's legislation must continue to reaffirm a commitment to take care of our civilian employees, service members, and their families as they, in like manner, commit to a career of service to our country. As leaders, we must remain mindful of how important it is that we win the battle for the hearts and minds of these talented men and women and their families.

Transformation and Process Improvement**Information Technology: Our Key Enabler**

USTRANSCOM is an information-intensive command. Despite technology advances, planes, trucks, trains, and ships only move so fast. Similarly, geographic hurdles remain relatively fixed for our physical assets. Hence, Information Technology (IT) is the enabler for collaborative, dynamic decision-making and global command and control to deliver the speed, effectiveness, and efficiency of USTRANSCOM's operations; and, it is not IT alone, but the combination of IT with supportive processes and organizational facilitators, that gives us a real advantage.

USTRANSCOM is committed to information dominance. Actionable, decision-quality information superhighways are the way ahead. Already, the Command uses its IT to direct execution, track delivery, pay providers, and make the most effective use of transportation assets, while routinely operating in austere environments half a world away. Simply put, USTRANSCOM cannot execute its mission without robust IT.

One of USTRANSCOM's key responsibilities to the warfighter is to ensure ITV of personnel, supplies, and equipment. USTRANSCOM uses the Global Transportation Network (GTN) as the IT tool to provide ITV. GTN provides the near-real time worldwide visibility of passengers and material moving from origin to destination through the DTS, regardless of the mode of transportation used. GTN uses information provided by 23 DOD source systems and more than 125 commercial carrier IT systems. During OEF and OIF, the Command extended that capability in support of two major combat operations to include movement of passengers and cargo within both theaters of operations. At the peak of OIF, GTN processed over 5 million transactions per day, with over 14,000 daily customer requests for information on strategic and tactical lift. Development of the next generation of GTN, called GTN 21, is well underway towards an early FY05 initial operating capability. GTN 21 will

integrate transportation information that supports our command and control mission requirement to direct, control, and execute operations of assigned forces pursuant to global transportation management.

We will advance the current USTRANSCOM collaborative capability through Agile Transportation for the 21st Century (AT21) initiatives designed to introduce collaborative analysis and decision-making capabilities in distributed, information-intensive environments. Those environments will enable interactive visualizations to exchange information; evaluate courses of action; and make more informed, effective, and timely modal decisions.

In addition to implementing major improvements to our transportation and command and control (C2) data systems, USTRANSCOM recognizes and maintains a significant reliance on global communications networks. Indeed, our success in developing world-class information technology systems creates a need for more robust bandwidth resources and end-to-end connectivity with transportation elements and supported forces deployed throughout the world. Accordingly, USTRANSCOM and its component commands continue to invest in major upgrades to servicing communications and network infrastructures. These modernization and transformation efforts address a range of fixed terrestrial and space-based networks to include the "last tactical mile." We continue to implement Radio-Frequency Automatic Identification Technologies to support our goal of providing combatant commanders detailed tracking information on the movement of cargo throughout the transportation system. Further, we are making major strides in expanding the bandwidth capabilities of our terrestrial campus networks and achieving a level of redundancy to ensure full continuity of operations.

On the contingency operations side, the command is also making significant progress in addressing "last tactical mile" requirements using innovative deployable satellite communications techniques and systems. Our progress is clearly demonstrated as we enjoy unprecedented success rates in

capturing and disseminating cargo and passenger movement information from our unimproved tactical air and seaports supporting OEF and OIF. However, these successes do not come without challenges and costs. Towards that end, USTRANSCOM fully supports ongoing DOD programmatic efforts to expand terrestrial Global Information Grid enterprise bandwidth and launch robust communications and blue-force asset tracking satellite constellations.

In accordance with current mandates, USTRANSCOM developed and implemented an enforceable enterprise-level architecture (EA) for the DTS. The DTS EA is the principal tool for managing the Command's current operational processes, capabilities, and technology investments as well as the required operational and technological initiatives for the future. The latter is especially important as USTRANSCOM works hard to move the DTS forward as the premier global distribution organization in the world. We have had tremendous success, garnering several prestigious IT awards in 2003 to include the Computerworld Honors Program Laureates Medal for Outstanding Achievement in IT by a Government Organization, *E-Gov Digest/Federal Computer Week* magazine's Enterprise Architecture Excellence Award, and a nomination for the DOD Chief Information Officer (CIO) Award. It is no longer solely a matter of who has the best or most people and equipment, but rather who can best gather, understand, and manage information. Because National interests rely so heavily on force projection, timely and free-flowing transportation information is vital. Thus, it is important that USTRANSCOM continuously evolve and manage an integrated, forward-looking, interoperable information systems capability for the entire DTS and those who depend upon or interact within it.

Distribution Process Owner (DPO)

On September 16, 2003, the Secretary of Defense designated Commander, USTRANSCOM, as DOD's Distribution Process Owner, charged with improving the overall efficiency and interoperability of distribution-related activities:

deployment, sustainment, and redeployment support during peace and war. In addition, the DPO serves as the single entity to direct and supervise execution of the strategic distribution system.

Prior to this designation, end-to-end distribution support to the warfighter was marked by a multitude of process and information technology challenges. Essentially, DOD distribution was a series of stove-piped processes and information systems managed by many discrete owners. Such segmentation caused inefficiencies and drove DPO designation to promote enterprise solutions.

As a Department, we will bring our collective talents and ongoing initiatives together to forecast requirements, synchronize the movement of cargo and personnel from a source of supply to a designated customer, and expeditiously respond to warfighter requirements. The intention is to provide a "factory to foxhole" distribution system, linking the entire global DOD supply chain.

The DPO's focus area extends from a point of sale to the first retail activity in theater, as designated by the theater commander. In addition, we plan to designate one IT backbone, establishing business rules to link sustainment and distribution systems into a data warehouse, where supply requisitions and movement requirements are visible to distribution system customers.

In conjunction with our partners, we have already started the process of transforming the distribution system. We have solicited the ideas and active support of OSD, the Joint Staff, Combatant Commanders, Services, and DLA in determining the road ahead. With those partners, we have collaboratively determined the key issues, identified appropriate lead, and have begun work through a series of joint service teams to drive distribution process improvements.

For instance, we are effectively shattering the barrier between strategic and theater distribution as one of our first "quick wins." We deployed a first-ever CENTCOM Deployment and Distribution Operations Center (C-DDOC) to the USCENTCOM AOR within 90 days of determining there was a need. We will use the lessons learned from this pilot to form the basis for an enterprise approach to manage strategic and theater distribution requirements and assets.

To drive consistent change, we have established a supporting organizational structure to transform DOD distribution. The Distribution Transformation Task Force, as the name implies, crosses Service, combatant command, and agency borders, and extends from flag officer to action officer level. Ultimately, this organization will develop process and technology solutions that will transform DOD's end-to-end distribution system.

We have a unique opportunity to use the capabilities and peer influence that a combatant commander brings to the table to transform our strategic distribution system into a single-faced, reliable, visible, and simplified strategic distribution system. The warfighters deserve no less.

Organizational Change

In 2003, USTRANSCOM optimized its headquarters organization to better serve its customers while conserving precious time and resources. Originally initiated as part of a DOD-mandated 15 percent headquarters reduction effort, the Command made the most of the opportunity through prudent elimination of redundancy, divesting of functions better accomplished elsewhere, and realigning functionally within the headquarters along core business processes. USTRANSCOM created a light, lean, execution-focused Operations Directorate (J3) by redistributing non-execution related functions, processes, and personnel to other command directorates and centers of gravity. This reshaped organization allows us to better support the ongoing WOT while posturing ourselves to accept transformational responsibilities.

The restructured J3 includes a Surface Cell leveraging subject matter experts from SDDC, MSC, and USTRANSCOM in order to improve the timeliness and effectiveness of surface modal decisions made by the Command. Our exceptional responsiveness in the recent build-up to and prosecution of OIF is solid testimony to the success of our reorganization efforts.

Over the past several years, USTRANSCOM's components have actively transformed their own structures as well. SDDC's recent name change reflects its new emphasis on joint distribution. The SDDC Operations Center, with its enhanced ability to focus on directing terminal operations at its 24 military ports around the globe, has made end-to-end distributions a priority, thus supporting USTRANSCOM's overarching task of improving the DOD distribution system.

Reorganization within AMC in 2003 returned the command to its historical roots of executing global mobility operations and eliminated functions redundant to the AMC staff. Highlighting the importance of forward operations, AMC's two numbered air forces were redesignated as Expeditionary Mobility Task Forces, providing direct, forward leadership of critical mobility assets. Simultaneously, AMC reactivated the 18th Air Force at Scott AFB to create a single commander charged with the tasking and execution of all air mobility missions. The 18th Air Force Commander maintains operational control of AMC's Tanker Airlift Control Center and all AMC airlift wings and groups within CONUS, Europe, and the Pacific, freeing the AMC Headquarters staff to focus on training, organizing, and equipping the air mobility force. Similar to the USTRANSCOM and SDDC changes, AMC's restructuring optimizes the organization to support worldwide deployment and distribution operations.

Financial Transformation

USTRANSCOM, in partnership with the Air Force and Defense Finance and Accounting Service, is committed to transforming its business and financial processes and systems enabling improved support to the warfighter. As a part

of DOD's Business Management Modernization Program, USTRANSCOM submitted and the Under Secretary of Defense (Comptroller) approved an initiative to improve outdated and unreliable processes and systems for working capital and general fund financial transactions. The objective is to provide a single financial system for USTRANSCOM that is integrated, reliable, accurate, and timely. In addition, Air Force general funds processes will be reengineered allowing USTRANSCOM and AMC to effectively manage general and working capital funds within the same system, further reducing redundancy and promoting efficiency within the financial management system.

Readiness and Modernization: Building for the Present and Future

Readiness: One Team - One Fight

USTRANSCOM readiness relies heavily on our mobility team partners in the National Guard and Reserve. More than any other combatant command, USTRANSCOM relies on its Reserve Components (RCs) for peacetime responsiveness and wartime capability. In every operational arena - air, land, and sea - USTRANSCOM RCs provide most of the Command's military wartime capability. Since USTRANSCOM cannot meet requirements without RC support, it is imperative that the Command and its components maintain RC mobilization ability and flexibility.

The Guard and Reserve provide approximately 56 percent of USTRANSCOM's personnel. They also comprise 61 percent of CONUS land and 57 percent of airlift transportation capacity. In fact, the Air Reserve Component (ARC) owns 53 percent of outsize/oversize airlift capability (C-5s, C-141s, and C-17s), more than 62 percent of the KC-135 force, and over 77 percent of the C-130 fleet.

RC support has been key to USTRANSCOM's peacetime responsiveness and the Command's ability to meet its mission in the WOT. The President's Executive Order authorizing partial mobilization (up to one million reservists for up to two years) has proven crucial during OEF, ONE, and OIF. Although

thousands of our Guard and Reserve forces volunteered to support these contingencies, USTRANSCOM and its components were required to mobilize thousands more, most of whom deployed in support of air refueling, airlift, and force protection missions.

To put this in perspective, in a typical year, AMC utilizes the services of approximately 1,400 ARC volunteers over the course of approximately 450,000 man-days to conduct normal operations. In FY03, AMC mobilized 27,532 ARC personnel to support contingency operations, providing a total of 1,158,034 man-days over and above its contingency volunteers. The importance of RC personnel is just as pronounced in MSC and SDDC. MSC mobilized 111 RC personnel, a total of 16,498 man-days, in support of sealift operations in FY03. SDDC relies on its Reserve forces for approximately 26,500 man-days in a normal year, but used 326,310 man-days for 894 mobilized personnel throughout FY03 in response to contingencies. Even USTRANSCOM Headquarters, in the midst of unprecedented OPTEMPO, benefited from expertise provided by 144 reservists and guardsmen, contributing 40,725 man-days of experience in the effort.

Antiterrorism and Force Protection (AT/FP) Readiness

USTRANSCOM aggressively advanced DOD's efforts in combating terrorism and supporting homeland security. The Command and its components implemented key programs and collaborated on interagency initiatives contributing to success in the WOT.

USTRANSCOM led the first-ever development of embarked security teams on MSC common-user sealift vessels deploying in support of OIF titled Operation GUARDIAN MARINER (OGM). Supported heavily by Army and Marine Corps forces and expertise, OGM ultimately mobilized 110 twelve-man teams plus a command and control element to secure vessels transiting chokepoints and ports within the CENTCOM AOR deemed at risk for terrorist activities. USTRANSCOM subsequently expanded the scope of OGM to provide security to common-user MSC

ships globally. Recognizing the success of OGM, the Secretary of Defense acted to further institutionalize and perpetuate the program by designating the Navy as Executive Agent for military sealift force protection beginning in June 2004, and USTRANSCOM is currently coordinating program transition details with that service.

Man Portable Air Defense Systems (MANPADS), or shoulder-fired surface-to-air missiles, remain the most serious threat to our air mobility aircraft. In cooperation with the National Geo-Spatial Intelligence Agency, we have developed computer-generated MANPADS footprint graphics that display risks to airlift as they cycle through airfields in high-risk locations. USTRANSCOM and AMC also have partnered with outside agencies to mature and expand cargo-screening technologies and develop powerful new tools that will ultimately detect small amounts of explosives in packed cargo pallets without the use of labor-intensive individual inspections.

Homeland seaport security continues to be one of the nation's most challenging force protection issues. In order to strengthen security within our seaports and ensure our ability to deploy and sustain forces, we have engaged on several fronts with MARAD and other National Port Readiness Network (NPRN) partners. The result is an NPRN Memorandum of Understanding which lays out specific procedures for USTRANSCOM, MSC, SDDC, and USCG in coordinating and executing port and waterside protection of strategic sealift out-load operations. The addition this past year of USNORTHCOM and the Transportation Security Agency to the NPRN lends significant expertise in this critical area. Additionally, our bilateral work with the USCG was, in part, the impetus for their creation of new and extremely valuable Mobile Safety and Security Teams (MSST) that provide increased capability to protect the nation's strategic ports from seaward threats. Furthermore, these teams provide waterside security for MSC vessels.

USTRANSCOM has launched information and intelligence-sharing initiatives with all four commercial transportation sectors, air, road, rail, and sealift, as well as with the Transportation Security Administration, to leverage the unique capabilities within both the commercial and defense sectors of the DTS and to collectively close seams within the transportation system's security posture nationwide. Antiterrorism legislation is a step in the right direction, but coordination of the many users of our commercial ports is an enormous undertaking.

Concerning our military ports, USTRANSCOM and SDDC worked to secure emergency funding to further improve security at Military Ocean Terminal Sunny Point (MOTSU), North Carolina and Military Ocean Terminal Concord (MOTCO), California. These funds will build innovative waterside protective barriers to help prevent a seaborne terrorist attack against these valuable facilities. Contracts were awarded in August 2003, and construction began in November 2003 for these important security enhancements.

The Command's Critical Infrastructure Protection (CIP) program made excellent progress during the past year. USTRANSCOM conducted vulnerability assessments of 19 identified critical nodes in FY03, partially paid for through WOT funding. With continued funding, now managed by the CIP Director in the Office of the Assistant Secretary of Defense for Homeland Security, we can continue this vital work throughout FY04.

The potential threat of Chemical, Biological, Radiological, Nuclear, and High Yield Explosive (CBRNE) attack at home and abroad further exacerbates USTRANSCOM's mission planning and execution. USTRANSCOM is diligently working to enhance its capability to protect personnel and facilities from CBRNE attack and, should such an attack occur, to detect contamination and decontaminate facilities, equipment, and personnel in order to facilitate mission success. AMC recently participated in a Large Frame Aircraft Decontamination Demonstration at Eglin AFB, Florida, the results of which are

due for release later this year. SDDC and MSC coordinated the procurement, distribution, and training of the necessary CBRNE equipment to protect merchant mariners on both government-owned and commercial cargo vessels transiting ports within the USCENTCOM AOR during OIF major combat operations. Both organizations continue to train and exercise CBRNE protection and response at port facilities via their units stationed worldwide. With the global proliferation of such weapons, CBRNE defense planning will continue to require our attention and requisite funding for the foreseeable future.

Mobility Capability Study (MCS)

Our current transportation force structure was programmed to meet the requirements established by the Mobility Requirements Study 2005 (MRS-05), based on the 1997 National Military Strategy (NMS). This study was completed in 2000. As a result of the events of 9/11, the national military objectives have changed. Objectives delineated in the draft NMS increase our overall air refueling, airlift, and sealift requirements considerably. A proposed plan is for the MCS and OA-05 to begin in June 2004, after the completion of OA-04, and conclude not later than March 2005. The goal to complete this full end-to-end mobility analysis within ten months presents an ambitious challenge. The scenarios proposed to support the MCS are centered in different regions of the world that will highlight our global mission. Both the "Win Decisively" and "Swiftly Defeat" scenarios will be developed in the Multi-Service Force Deployment process and vetted in the OA process.

Readiness and Modernization

Air Mobility

USTRANSCOM's number one shortfall is its aging and numerically inadequate strategic airlift fleet. We have a significant gap in our ability to meet the needs of DOD agencies, specifically the needs of the regional combatant commanders. Our current strategic airlift shortfall of 9.8 Million Ton-Miles per Day (MTM/D) from the MRS-05 goal of 54.5 MTM/D is due to a shortage in

the number of aircraft available and significant maintenance challenges specifically associated with our fleet of C-5 aircraft. Consequently, a key USTRANSCOM modernization goal is to retire the oldest and poorest performing C-5s, modernize the remainder, and evaluate the continued procurement of C-17s.

The C-5 continues to be a critical component of AMC's airlift fleet and is integral to meeting airlift mandates. However, the aircraft's enormous capacity is hampered by unacceptably low reliability and maintainability. Current Mission Capable (MC) rates for C5-A and C5-B aircraft are 63.5 percent and 73.8 percent, respectively. In fact, during the last four years, because of low C-5 MC rates, AMC has had to assign two C-5s against many higher-priority missions to better ensure reliability and/or on-time mission accomplishment. The net result is fewer aircraft available for tasking and less operational flexibility.

AMC is addressing this critical capability shortfall with two major C-5 modernization efforts: the Avionics Modernization Program (AMP), and the Reliability Enhancement and Re-engining Program (RERP). AMP replaces all high-failure and unsupportable avionics and flight instrument systems on the C-5 fleet. This replacement makes the C-5 compatible with international standards required for flight today, as well as in tomorrow's increasingly restrictive Global Air Traffic Management (GATM) airspace. AMP installs an all-weather flight control system and Secretary of Defense-mandated navigational safety equipment, including a Terrain Avoidance Warning System (TAWS). RERP will replace engines and pylons and upgrade the aircraft's landing gear, environmental control system, and auxiliary power units--the C-5's most unreliable systems. A number of independent studies have projected that C-5 modernization efforts could increase the C-5 MC rate as much as 13.5 percent, while simultaneously reducing our cost of ownership.

Several studies have recommended an operationally effective mix of RERPed C-5s and purchase of additional C-17 aircraft. America cannot afford to lose the niche filled by the C-5 fleet's organic capability or allow it to continue to atrophy.

USTRANSCOM's documented inability to meet the warfighter's military-unique airlift cargo requirements led to the acquisition of C-17s. To date, the C-17 program has delivered 113 of 180 authorized aircraft. While the approved 180 C-17 multi-year procurement plan is a big step in the right direction toward achieving needed capability, a more capable, versatile, and reliable strategic airlift mix should include C-17s and a correct number of fully modernized C-5s. This combination of aircraft provides a much-reduced average fleet age at the earliest date, while affording the needed flexibility to move outsize and oversize cargo over long distances and into short, unimproved runways. The C-17 has already proven exceptionally capable and reliable in airlifting our forces to the fight, no matter where that fight may be. It is the only aircraft capable of performing all missions: strategic airlift, tactical airlift, airdrop (key to strategic brigade airdrop), aeromedical evacuation, austere airfield operations, denied access, and special operations. In a "come as you are" world, we must continue C-17 investment. This versatile and reliable platform is the "sure bet" for our future force.

AMC's venerable air refueling force is performing superbly in ONE, OEF, and OIF. Operations today are increasingly air-refueling dependent, and the force is delivering, but the strain is evident. Our concerns grow daily. The Tanker Requirements Study 2005 (TRS-05) supported our long-held position that AMC has a significant KC-135 crew-to-aircraft ratio shortfall. The current active duty and reserve component crew ratios of 1.36:1 and 1.27:1, respectively--inherited from the KC-135's Cold War days--are simply inadequate to meet our current contingency requirements. TRS-05 indicated a

need for a 1.66:1 crew ratio averaged across all scenarios, with 1.92:1 needed to meet the most demanding scenario. USTRANSCOM and the Air Force are working in concert to resolve this issue through funding and force structure initiatives. One proposal is to retire 68 of the oldest and most unreliable KC-135E-model aircraft from the ARC and replace them with 48 of the more reliable KC-135R models from the active force, while retaining the current crews. The resulting offset would be reinvested in the remaining KC-135 fleet for improved crew ratios and maintenance.

A review of TRS-05, as well as the KC-135 Economic Service Life Study (ESLS), further quantifies the future requirements on our 44 year-old KC-135 force. TRS-05 reinforced the importance of our tanker fleet and the ESLS identified the steady (1 percent per year) cost growth and changing availability expected as we continue to operate our 1950s vintage KC-135s into the future.

To keep the KC-135 viable until a replacement tanker is brought into service, AMC is modernizing the aircraft with the GATM program. GATM, programmed for fielding between 2003 and 2016, adds increased communications, navigation, and surveillance capability, ensuring that our air refueling tanker aircraft have global access to ever-increasing restricted airspace. Without GATM, tanker aircraft may be faced with longer routes in non-optimum airspace resulting in longer flying times and less fuel available for offload.

Additionally, 40 KC-135 aircraft will be modified to carry the Roll-On Beyond-Line-of-Sight Enhancement (ROBE) package. This small, removable payload, when installed, enables the KC-135 aircraft to act as an airborne data link between battle directors and the warfighters in theater or en route. This link gives all participants the ability to deliver the required information to the right location, at the precise time, and in an actionable format. The KC-135 ROBE-equipped tanker is the first in a family of

Scalable, Multifunction, Automated Relay Terminals (SMART) aircraft, a capability to be further developed and integrated into the proposed KC-767 tanker.

There are several challenges facing the C-130 fleet. It consists of approximately 700 aircraft composed of 20 different models. USTRANSCOM operates 410 of 514 basic combat delivery C-130s through AMC. The average active duty aircraft is 28 years old, the number of C-130s is declining as individual aircraft reach the end of their service life, and older onboard equipment across the remainder of the fleet is rapidly becoming obsolete and cost prohibitive to maintain. To remedy these problems, AMC proposes acquiring 150 new combat delivery C-130Js, retiring an equivalent number of the least maintainable C-130s, and modifying those with the longest remaining service lives to a common C-130 AMP configuration. The core of the new common configuration is a total cockpit avionics modernization incorporating GATM-required upgrades to communications, navigation, and surveillance systems.

OEF originally highlighted the reengineered AE system, and lessons learned have driven further refinements and improvements that paid exceptional dividends during OIF's significantly higher patient movement tempo. Small but highly capable AE teams deployed forward and provided rapid casualty evacuation shortly after initial treatment. More than 17,000 patients have been evacuated during OEF/OIF to date. Within the USCENTCOM AOR, over 95 percent of AE missions were flown using C-130s and C-17s, while C-141s performed the majority of the inter-theater AE missions.

Ongoing AE initiatives are integrating AE into operations, including stage management, airlift control elements, Air Mobility Control Centers, and theater Air Mobility Operations Control Centers. AMC has initiated an AE concept of operations (CONOPS), fully incorporating the AE mission into the mobility system to meet peacetime and wartime AE mission requirements. This

CONOPS creates efficiencies through the use of multimission mobility aircraft with interchangeable patient care modules, integral litters, and patient support pallets. Use of multimission aircraft for the AE mission eliminates the added time and expense of procuring, operating, and maintaining purpose-built AE aircraft, and are needed as the last C-9 Nightingale AE aircraft will retire from service in FY05.

To help counter the worldwide proliferation of MANPADS, AMC has already begun fielding the Large Aircraft Infrared Countermeasures (LAIRCM) system on its C-17s and C-130s. The plan is to equip enough airlift and tanker aircraft with this laser-based system to support at least two small scale contingencies, while examining possibilities for protection of CRAP commercial aircraft. We also continue to partner with industry and other government agencies to develop systems that will enhance situational awareness for aircrews as well as provide improved protection from infrared and radar-guided threats in the future.

Sealift Readiness and Modernization

Thanks to \$6 billion in Congressional funding for LMSRs, as well as increased funding for RRF readiness and significant enhancements to prepositioned ships during the past decade, our sealift force is vastly more capable than ever before. Strategic sealift is critical to our nation's power projection strategy.

The 20th LMSR was delivered last year, completing one of the largest strategic sealift acquisition programs in history, a program clearly validated by superb LMSR performance in the OIF deployment/redeployment process. Additionally, the increased readiness standards and maintenance of our RRF have made it more efficient and better able to meet lift requirements than ever before. The RRF today is a well-maintained, ready force of 31 surge roll-on roll-off ships and 37 special-purpose sealift ships. MSC's surge sealift fleet, comprised of eight FSS and eleven LMSRs, regularly

supports joint exercises, while its prepositioning ships provide forward-deployed combat equipment and sustainment supplies to the regional combatant commanders. Although our sealift force is more capable and ready today, we must address the challenge of rapid force closure.

The latest assessment of mobility requirements as defined in MRS-05 indicates that the total sealift cargo requirement is 9.62 million square feet, which has been the target capability for our organic sealift program. Recent operations, however, have shown that our current surge capability is only 6.81 million square feet. Lessons learned from OIF have confirmed two major changes that contribute to this reduced capability: (1) the actual mean stow factor on surge ships is closer to 65 percent when deploying force packages rather than the standard planning factor of 75 percent (reducing the lift capacity by 1.31 million square feet), and (2) the entire lift capacity of the RRF was not used to transport surge unit equipment because of the cumbersome and lengthy loading/unloading process for some of the ships (further reducing capacity by 1.16 million square feet). Furthermore, OIF confirmed that the capability to load, sail and unload our military's "surge" unit equipment in time for it to be effective for the combatant commander is critical. Fast roll-on roll-off ships (ROROs) are the most effective means of meeting this surge requirement.

The importance that the evolving NMS places on the requirement for rapid force closure presents a new challenge to strategic sealift mobility. With this in mind, the speed of half the fleet (by capacity) is not capable of providing the global response from CONUS in the timeframes that are being projected for 2010 requirements. To meet future obligations, we must fund the fleet at appropriate levels commensurate with the requirement, maintain program vigilance, and establish a futuristic vision to sustain and recapitalize the required levels of sealift readiness and capability for the long term. The capability of today's surge fleet is well understood, and we

look to the MCS to establish the correct vision for required future sealift mobility capabilities. Additionally, fiscal commitments toward the research and development of high-speed strategic sealift are required to help meet future sealift needs.

Infrastructure Readiness and Modernization

Another vital component of USTRANSCOM readiness is the ability to project and sustain forward presence. Each transportation component command has forward-based units and deployed forces around the globe. SDDC operates at seaports worldwide, interacting with allied governments, militaries, and local authorities. These forward-based activities enable instant access to seaports, as well as to the lines of communication radiating from them. The MSC forward deployed staffs serve as focal points for MSC customers in their respective operating areas and provide direct links to MSC ships for maintenance, logistics, and other services. AMC maintains en route infrastructure worldwide to facilitate establishment of vital air bridges for the airlift of critical personnel and cargo in times of crisis. Modern infrastructure, in CONUS and overseas, is critical to effective and efficient strategic deployment.

As a predominantly CONUS-based force, infrastructure means more to us today than ever before. Yet, we have fewer overseas bases through which we can operate, and access to those bases is never guaranteed, as experienced in Turkey's refusal last year to permit U.S. use of bases to facilitate the OIF deployment. Similarly, the increasing OPTEMPO is stressing this diminished base structure more than ever. Along with the Services and regional combatant commanders, USTRANSCOM must continue to monitor our global mobility infrastructure, keep up with needed repairs and improvements, and remain prepared to operate in new or bare base environments when required.

In CONUS, the Army has made substantial investments in its combat equipment loading facilities at power projection platforms and its

containerization facilities at ammunition depots. These improvements have significantly streamlined the loading of 41,404 railcars and export of 7,447 ammunition containers throughout FY 03.

Overseas, the United States European Command (USEUCOM), USCENTCOM, USTRANSCOM, and the Joint Staff, through the European En Route Infrastructure Steering Committee (EERISC), oversee infrastructure requirements for the primary en route air mobility bases in USEUCOM to support USCENTCOM operations in Southwest Asia and staging operations for Africa. Partnering with the Defense Logistics Agency (DLA), the EERISC has developed a comprehensive plan to improve the infrastructure at those bases. The EERISC has identified, validated, and collaboratively championed the need for more than \$700 million in fuel hydrant, ramp, and runway projects throughout the European theater to support mobility requirements. Likewise, we are working with USPACOM and DLA to identify and fix en route base shortfalls in the Pacific region in support of Northeast Asia contingencies and staging for operations in Southeast Asia. The USPACOM En Route Infrastructure Steering Committee (PERISC) has identified and validated the need for over \$500 million in improvements throughout the region. DLA and Air Force budgets now support all identified en route fuels projects. Significant construction began several years ago and continues in FY04, but the infrastructure will not get well (i.e., fully meet the requirements laid out in our war plans) until the end of FY07, and then only if all funding and construction remains on track.

These European and Pacific en route projects are being implemented primarily to support the MRS-05 established passenger and cargo throughput requirements. However, additional infrastructure to support the WOT is required and being studied by both the EERISC and PERISC. Moreover, today's current operations, combined with existing studies, further demonstrate the need for expanded hazardous cargo capabilities at en route and theater

airfields around the globe. To this end, USTRANSCOM is working with combatant commanders, Joint Staff, and DLA to implement a truly global en route infrastructure system.

Efficient cargo movement through aerial ports requires appropriate materiel handling equipment (MHE). The Air Force's current fleet of 40K loaders, wide body elevator loaders (WBELs), and 25K loaders is old, deteriorating, and suffering from poor reliability and maintainability. Fortunately, we are fielding 318 new Tunner 60K loaders to replace all 376 40K loaders and 147 of the 206 WBELs. To date, AMC has fielded 264 of these capable new loaders. They have a much-improved mean time between maintenance, are compatible with all military and commercial cargo aircraft, and can load six standard Air Force 463L pallets at a time. The new Halvorsen (25K) loader is smaller in size and weight than the old 25K loader, is transportable on C-130s, C-17s, and C-5s, and is more reliable than its predecessor. USTRANSCOM has a requirement for 618 Halvorsen loaders, which supports unfilled authorizations, and replaces the 1960's vintage 25K loaders and remaining 59 WBELs. Currently 312 Halvorsen loaders are funded, leaving 306 unfunded for subsequent Program Objective Memorandum (POM) submission. Halverson deliveries began in FY01 with 236 delivered to date.

Readiness: Commercial Industry and Labor Teammates

Our readiness also depends on timely access to militarily useful commercial transportation. USTRANSCOM's superb relationship with the U.S. commercial transportation industry and supporting labor organizations allows DOD to leverage significant capacity in wartime without the added peacetime cost of sustaining comparable levels of organic capability. For example, under full activation, CRAF provides 93 percent of our international passenger capacity, 98 percent of our AE capability to CONUS, and 41 percent of our international long-range air cargo capacity. The CRAF program affords peacetime business to participating airlines in exchange for their pledge to

provide specified capacities in wartime. CRAF's ability to dramatically influence operations literally overnight was never more apparent than immediately following the terrorist attacks of 9/11. On 10 September 2001, USTRANSCOM had 27 organic military aircraft in service on key express and channel movements. On 13 September 2001, after the historic shutdown of the airways, we again had 27 aircraft in service on those same routes. But this time, there were only 3 military aircraft augmented by 24 commercial aircraft. Having unencumbered 24 military aircraft via the voluntary commitment and patriotism of our CRAF partners, USTRANSCOM could immediately answer the call for ONE.

Our CRAF partners, both voluntarily and under activation, continue to support critical wartime requirements and, in exchange, deserve as predictable a safeguard of their capital investments as possible. In this respect, the Federal Aviation Administration's Aviation War Risk Insurance is vital to assure our CRAF carriers that they can recover from significant loss or damage incurred in support of DOD. The CRAF program demonstrates that all U.S. air carriers, large and small, are key to a robust civil air industry. Therefore, we support the Fly America statute (49 USC 40118) and what we refer to as the Fly CRAF statute (49 USC 41106) as they serve to support and sustain this critical national asset.

Because of the increasing requirements related to the deployment of forces in preparation for OIF, USTRANSCOM activated the CRAF Stage I passenger segment on 8 February 2003. Stage I remained activated through 18 June 2003, when major combat operations had ceased and initial force redeployments had occurred. Under CRAF activation, each aircraft comes with four crews comprised of (non-Reservist) U.S. citizens, and the aircraft are dedicated to DOD. This combination allows for greater security, scheduling flexibility, and responsiveness to changing requirements. Additionally, activation removes all questions about war risk insurance coverage as the

non-premium war risk insurance and DOD indemnification programs cover hulls, liability, and crew insurance coverage for all DOD missions. For this activation, a total of 51 aircraft and associated crews were activated. Their associated carriers made the aircraft and crews available for their first missions within 24 hours of the tasking, and these forces significantly contributed to USTRANSCOM's ability to rapidly flow manpower to the region.

The Voluntary Intermodal Sealift Agreement (VISA) is the maritime equivalent of the CRAF program. Under VISA, DOD has access to commercial U.S.-flagged sealift capacity and intermodal infrastructure in return for peacetime business preferences. Because pre-negotiated contracts with the carriers permit early access to additional lift capacity, the time required to close forces for the counterattack phase of war operations can be significantly shortened. VISA participants move over 80 percent of wartime sustainment cargo.

Force deployment requirements in support of OEF/OIF were met with organic shipping assets and commercial shipping acquired through MSC contracting initiatives. Therefore, activation of VISA was not required. However, VISA could conceivably be called upon to meet emerging sustainment requirements.

MSP, another critical element of our commercial sealift program, provides assured access to sealift/intermodal capacity and a readily available, highly trained and qualified work force of merchant mariners employed in U.S.-flagged shipping. The recent authorization of the Maritime Security Act of 2003 expands the current MSP fleet from 47 to 60 vessels. This increase allows the opportunity to better assure access to U.S.-flagged "low density-high demand" assets (e.g., RO/RO and heavy lift ships). MSP provides an underpinning for VISA by helping to guarantee the continued presence of a minimal U.S.-flagged commercial fleet operating in international commerce and that fleet's availability to provide sustainment sealift capability in time of war or national emergency. This guarantee is particularly critical should

the U.S. find itself in a position where it must act alone. Additionally, this increase in fleet size should play a critical role in expanding the U.S. mariner base. Currently, the MSP fleet accounts for more than 900 crew billets that provide jobs to roughly 1800 trained and qualified mariners. Finally, MSP provides financial assistance to offset the increased costs associated with operating a U.S.-flagged vessel. In return, participating carriers commit vessel capacity and their intermodal transportation resources for DOD use in the event of contingencies.

In concert with their commercial aviation and maritime counterparts, our nation's commercial longshoremen continue to play an integral role in the DTS, facilitating SDDC marine terminal operations at strategic seaports both in CONUS and overseas. Throughout the massive deployment operations in preparation for OIF, between 400 and 500 longshoremen supported 24-hour operations at U.S. strategic ports alone. Their herculean efforts made a tremendous difference in our ability to load and deliver combat capability quickly and safely to Southwest Asia.

Along the lines of the CRAP and VISA programs, USTRANSCOM is currently investigating Commercial Assured Access to surface transportation assets, specifically, commercial chain tie-down rail flatcars. Chain tie-down rail flatcars are the preferred and primary method used to support large movements of military vehicles and equipment from "fort to port" and vice versa within CONUS. Currently, there is a shortfall of approximately 2,000 rail flatcars (commercial and DOD-owned) to support MRS-05 surge requirements. The long-term issue is that, even with a recent 10-year life extension, we will see large-scale mandatory retirement of the chain tie-down rail flatcars in the commercial fleet (slightly over 5,000 cars) beginning in 2014. There is no current industry plan to recapitalize, based on the fact that such flatcars are primarily used to move military equipment only. USTRANSCOM and SDDC are working with the railroad industry to ensure that sufficient rail transport

capability exists, both now and in the future, to handle the CONUS movement of equipment, ammunition, and supplies as part of force deployment and redeployment operations.

Transportation Systems of Tomorrow

The need for more responsive and flexible lift, getting it where it needs to be, when it needs to be there, cannot be overemphasized. New mobility platforms as well as enhanced infrastructure technologies and process/organizational improvements are essential to meet the challenge.

In conjunction with the Joint Staff, Services, and other combatant commands, USTRANSCOM participated in a Defense Planning Guidance (DPG)-directed study of future (2020) mobility platforms known as the Advanced Mobility Concept Study. This study provided the initial identification and prioritization of the future mobility assets required to support DOD's transforming forces and operational concepts for 2015-2020. The study recommended: 1) OSD include appropriate direction in POM SPG-06 to initiate Research Development Testing and Evaluation on a Shallow Draft High-Speed Vessel, Theater Support Vessel, Super Short Take-off and Landing Aircraft, Global Range Transport, and Joint Rapid Airfield Construction. OSD and the Services will continue to address technical readiness, cost, port analysis, and impacts on the current programming cycle. 2) Conduct an excursion to the next Mobility Capabilities Study that considers transformed forces and mixes of advanced and current lift in the 2020 timeframe. 3) Ultra-Large Airlifter (ULA) continue as a platform for further related studies involving advanced lift platforms since Defense Advanced Research Projects Agency (DARPA) is currently funding its research as a multi-mission platform.

USTRANSCOM, working with industry, is actively exploring a wide variety of future technologies and concepts for military and commercial use. In terms of sealift, we are studying militarily useful high-speed vessels (HSVs) that provide the potential to enhance intra-theater lift capability. These

shallow draft high-speed platforms allow access to a greater variety of unimproved ports, providing enhanced anti-access mitigation. Currently, HSVs are capable of transporting over 1,000 passengers and more than 500 tons of cargo at speeds in excess of 40 knots.

From an air mobility perspective, our interest lies in high-speed, low-observable multimission strategic mobility aircraft with short take-off and landing as well as autonomous approach capabilities. In the future, it makes sense to look at a family of transport category aircraft that could satisfy multiple needs. Variants of a common airframe could be built to serve as a tanker, an airlifter, a penetrating aircraft for the Special Operations Forces infiltration mission, a gunship, or an Intelligence Surveillance Reconnaissance platform. This approach would have standardized cockpits, engines, and systems to minimize overall development expenses and reduce life-cycle costs.

We need a collaborative effort between the Joint Staff, Services, and other combatant commanders to shape our planning, policy, and procedures as technology moves from test and evaluation into acquisition. All of the types of systems that I just mentioned would be costly to develop, procure and operate. Much work remains to be done to determine how much they would add to our overall military capabilities, determine how costly it would be to pursue these individual systems, and decide on the right mix of systems and capabilities in which to invest. We must make decisions concerning future employment of this technology that are consistent with the best interests of our overall transportation system and our warfighters.

FINAL THOUGHTS from General Handy

All that matters, and what each of us in USTRANSCOM is pledged to do, is to provide absolute, complete, and total support to the warfighter.

On any given day, the USTRANSCOM team of professionals provides critical strategic transportation to a host of U.S. and international agencies.

Today, USTRANSCOM is simultaneously supporting every single combatant commander performing real-world operations. No matter what the mission assigned, the men and women who operate USTRANSCOM's air, land, and sea components are first out the door. There are not many headlines for what they do, but these dedicated professionals execute their global military mission every day in defense of our country.

I am extremely proud of today's USTRANSCOM and honored to lead the superb men and women who comprise our national defense transportation team. USTRANSCOM will continue to provide the most effective and responsive mobility capability the world has ever seen and, in light of recent developments, will endeavor to create that same level of efficiency and interoperability through a transformed DOD distribution process.

You can rest assured that USTRANSCOM's crystal clear vision of the way ahead will provide constantly improving, seamless, and responsive support to the warfighters. America's military might moves with us, and we are stepping out smartly.

**QUESTIONS AND ANSWERS SUBMITTED FOR THE
RECORD**

MARCH 17, 2004

QUESTIONS SUBMITTED BY MR. BARTLETT

Mr. BARTLETT. Your MRS study 2005 was done pre-9/11. Clearly, our world changed. Do we need to have a relook at that to see what the daily ton mileages really need to be in the context of this new world we are in. When you have completed the study, can you give us your needs in terms of low risk, moderate risk and high risk?

General HANDY. The Mobility Capabilities Study is being led by a combined effort from the Joint Staff and Office of Secretary of Defense. The United States Transportation Command's role is to be an active participant and provide expertise in areas such as risk assessment of the various options. The study, when completed, should be available for review.

Mr. BARTLETT. The 2001 Quadrennial Defense Review Report announced that the Navy would develop new concepts of maritime pre-positioning, high-speed sealift, and new amphibious capabilities for Marine Corps.

As the Commander of USTRANSCOM, how is headquarters USTRANSCOM and the Military Sealift Command making inputs into this process? What requirements do you see for future maritime pre-positioning and high speed sealift?

General HANDY. Our component, Military Sealift Command, is actively participating in the various working groups engaged with the Maritime Prepositioning Force Future (MPF-F) Analysis of Alternatives (AOA). When the requirements are finalized, MPF-F will likely include faster ships that can selectively discharge their cargo over the horizon. The ships will also need more capability for onboard cargo maintenance and staging of military passengers.

USTRANSCOM co-chairs the High Speed Sealift Executive Steering Committee along with Navy, U.S. Marine Corps and Army. The membership of the group also includes the Maritime Administration, Naval Sea Systems Command and Industry. This group and its subordinate working groups were chartered by the Navy and TRANSCOM to serve as a central depository and guiding body for information regarding high speed sealift innovation and research and development.

The future requirements for both maritime pre-positioning and high speed sealift should be defined during the upcoming Mobility Capabilities Study. I suspect that the need for a continued and enhanced maritime pre-positioned force will be validated through this study. Also, recent studies conducted by the Joint Staff have shown the need for high speed sealift, and I believe the Mobility Capabilities Study will also validate the need. Ships similar in size to our current Fast Sealift Ships, but with the ability to sustain forty plus knots over strategic distances is what I see for the future force.

Mr. BARTLETT. The Department of Defense has begun a process of transformation that is planned to provide enhanced capabilities. How might concepts of sealift and sealift requirements change as a result of transformation? If we fight wars with a more stand-off aviation or space intensive force, how might that change sealift requirements?

General HANDY. Transformation related to sealift mobility involves closing the force within a compressed timeframe and providing the Joint Force Commander with a combat ready force and the capability of selective offload. As a result, future sealift will be faster, contain automated cargo handling systems, and will provide for the integration of equipment and troops at sea.

Sealift capabilities exist to move combat equipment, combat service support equipment and the necessary sustainment for the forces. If we change the way we fight wars and the lift requirements change, it would make sense that the military sealift capability would change accordingly.

Mr. BARTLETT. Following the attack on the *USS Cole* what is the United States Transportation Command (USTRANSCOM) and the Department of Defense doing to ensure force protection of our ships both in port and through the straits, canals, or other constricted waterways?

Do you believe the Global War on Terrorism has increased the need for sealift force protection? If so, are you being provided the resources that you believe are required to address this threat?

General HANDY. Yes to both, the United States Transportation Command (USTRANSCOM) has implemented multiple initiatives to combat the dynamic threat of terrorism. The intent is to employ a layered, holistic approach to force protection in order to secure Military Sealift Command (MSC) vessels via an array of capabilities.

Based on evolving threat assessments, USTRANSCOM has employed up to 110 Embarked Security Teams for Operation Guardian Mariner. These teams are specially trained mobilized Army National Guard forces who provide point defense for, USTRANSCOM controlled, MSC assets through maritime chokepoints and entering high risk OCONUS ports of embarkation/debarkation, and other identified high threat areas. Other tactical efforts include nighttime high-speed transits through chokepoints, coalition/NATO escorts and P-3 patrols. Infrastructure improvements aboard USTRANSCOM controlled MSC vessels include the installation of closed circuit television and waterline lighting to monitor and detect threat activity.

In coordination with host nations some port infrastructure improvements have been developed to emphasize a layered series of active and passive defenses.

In the total effort to secure military strategic sealift capability, the United States Coast Guard, MSC, and Federal law enforcement entities have and continue to vet the civilian mariners employed aboard MSC vessels. As a result of this initiative, severable civilian mariners have been removed from their employment based on unfavorable background investigations.

Finally, as evidenced by the high profile attacks on *USS Cole* and French Motor Vessel *Limburg*, the terrorist threat to strategic sealift assets requires increased vigilance to protect our strategic sealift assets. I believe our initiatives to increase the physical security posture of strategic sealift vessels, whether in-transit or idle, should counter the threat in an aggressive manner within the constraints of available resources. The great success of Operation Guardian Mariner has been recognized and will be institutionalized as the Secretary of Defense designated the Secretary of the Navy as the Executive Agent for force protection of Military Sealift assets with an effective date of June 1, 2004. The United States Navy stands ready to assume the force protection responsibilities for all military sealift as of that date.

Mr. BARTLETT. The condition of your tanker fleet has been a hot topic in the news this year. What are the biggest challenges facing the current fleet? What steps are you taking to prepare your fleet for the future?

General HANDY. The biggest challenges facing the current KC-135 fleet are maintaining the level of investment required to fund the rising costs of maintenance, improving aircraft systems maintenance to enhance aircraft availability, and funding for upgraded KC-135 systems.

As documented in the Oklahoma City-Air Logistic Center briefing, "KC-135 Tanker Aging Aircraft Story", August 2002, the KC-135 fleet requires an increased level of maintenance to address increased usage and age (increased flight hours, fatigue, component replacement, cracking, corrosion, exposure to the environment, etcetera). Even though depot maintenance actions have been effective, costs have risen from approximately \$1.5 million per aircraft in 1990 to \$5-6 million per aircraft in 2002.

As for improving aircraft systems maintenance to enhance aircraft availability, aircraft fuels systems and landing gear are the highest drivers impacting not mission capable time (amount of time an aircraft in not able to perform its mission) after scheduled maintenance inspections (periodic inspections, Home Station Checks, etcetera). Fuels system maintenance accounted for approximately 25 percent of all not mission capable for maintenance time, while landing gear accounted for nearly 13 percent.

We are also challenged to upgrade KC-135 systems that will allow the aircraft to continue to operate in worldwide airspace and support United States global, military actions. Currently, the KC-135 fleet is undergoing the Global Air Traffic Management (GATM) modification. This is a \$1.1 billion program for modifying the fleet, but due to budgetary restructuring, the program is stretched to FY 2016. These upgrades are driven by civil aviation authority requirements for stricter compliance for communications, navigation, and surveillance. Failure to equip military aircraft for civil compliance has historically resulted in restrictions to flight operations.

As for 'what steps are we taking to prepare the fleet for the future', we are focusing on three areas:

(1) Completion of the Reduced Vertical Separation Minima (RVSM) allows the KC-135 to operate in airspace where separation has been reduced from 2,000 feet vertically to 1,000 feet starting at 29,000 feet. This restriction is currently in place in oceanic areas and in European airspace. RVSM airspace restrictions will be enforced in the continental United States beginning in January 2005.

(2) GATM modifications are vital to upgrading communications, navigation, and surveillance systems to meet future global airspace requirements. While RVSM cri-

teria restricts airspace vertically, GATM will restrict airspace horizontally. To date, 22 KC-135 aircraft have been modified for GATM. The Air Mobility Command (AMC/A3) approved KC-135 GATM modified aircraft for global operations on February 28, 2004. Also, following successful completion of a global Qualification Operational Test and Evaluation (QOT&E), the KC-135 GATM program received approval for "Full Rate Production" on March 8, 2004.

(3) Current proposals are underway to evaluate improved aircraft fuel bladders to reduce maintenance requirements/downtime. Planned replacement of KC-135 aircraft brakes with design currently used on other United States Air Force aircraft will increase brake reliability tenfold.

Mr. BARTLETT. We learned recently that the contract for the KC-10 Global Air Traffic Management (GATM) modifications has been canceled. Without these modifications, KC-10s may not be able to fly the most fuel-efficient routes over the Atlantic and in Europe. What plans are now being made to address these requirements for the KC-10 fleet?

General HANDY. Due to evolving Global Air Traffic Management (GATM) capability requirements and very slow progress on the KC-10 GATM program, the Air Mobility Command conducted a Business Case Analysis (BCA) that assessed the GATM approach against evolving KC-10 requirements and obsolescence issues. The BCA recommendation was to start an Aircraft Modernization Program to pursue a better long-term solution using a "digital backbone." Open competition will reduce costs and provide new technology solutions that will address the platform's growth potential and meet future airspace requirements through its useful service life (2040). We will implement any necessary intermediate measures to ensure airspace access until a new solution is selected. These intermediate measures will address near term GATM requirements communications, navigation, and surveillance.

Mr. BARTLETT. How would you characterize the condition of the transport fleet as a result of the intense operational tempo since the start of Operation Enduring Freedom? will the use of this fleet require increased routine and heavy maintenance at some point?

General HANDY. Even when compared to the pre-September 11-period, the overall fleet health remains strong despite a 48 percent increase in flying hours. Mission capable rates improved or maintained steady for all aircraft. Logistics departure reliability, a measure of how many missions did not go on time, remains within three percent of FY00 numbers. The sustained capability is a direct result of focus on continuing scheduled maintenance, high overtime and reserve force contribution, and creative leadership. Some minor scheduled maintenance was deferred for short periods of time. However, a strong planning effort and reserve manpower enabled us to meet the increased workload.

The Air Mobility Command (AMC) began sustained-surge operations months before bombs dropped to provide as many aircraft to the fight as possible, while maintaining maintenance discipline in preparation for the long haul. Scheduled depot inputs were continued, with no accelerations or compressions. Additionally, AMC rotated aircraft out of theatre for isochronal inspection flow to maintain the major inspection schedule, thereby minimizing the impact to post-conflict reconstitution.

This Herculean effort was accomplished on the backs of the combined Air Force team of active duty and reserve forces. AMC created a maintenance support concept to quickly shift maintenance capability where needed, and increased maintenance actions through sustained 12-hour shifts and over 1,100 reserve personnel. Maintenance capability was concentrated at large eastern hubs, shifting resources from western and Pacific bases, to enable sustained, increased surge efforts without deferring maintenance.

AMC regionalized C-5 generation efforts in the Eastern U.S. at Dover AFB, DE and Westover Air Reserve Base (ARB), Massachusetts. Additionally, we worked with system program office engineers to establish a 60-day moratorium on isochronal inspections, essentially moving the entire fleet's schedule 60 days to the right. This provided up to five additional aircraft a month to the fight, without jeopardizing safety.

Although we have taken extraordinary measures to keep the fleet healthy there are unknowns that have the potential to affect long-term fleet health. Sustained operations at the current level do have the potential to result in detrimental effects on the force but we will continue to curb the effects to the best of our ability. Currently, we do not see anything that points to increased routine and heavy maintenance. We will continue to closely monitor but we are pushing the fleet to unprecedented sustained levels and we simply do not know how these new levels will affect the future health of our fleet. Specific statistics in below table.

AMC AIRLIFT/TANKER RATES FY00 TO FY04*

C-5	DD-AWM	WW LDR	MC RATE	FLY HRS
FY-00	15.7	81.6	63.1	39,291
FY-01	16.3	82.7	66.6	43,988
FY-02	15.8	78.9	68.5	64,656
FY-03	15.9	79.6	70.7	72,043
FY-04	14.8	78.6	66.9	27,467
C-17	DD-AWM	WW LDR	MC RATE	FLY HRS
FY-00	11.3	94.7	82	51,478
FY-01	11.9	94.4	83.5	73,717
FY-02	9.5	94.0	84.6	101,821
FY-03	11.3	93.9	87.2	150,145
FY-04	9.2	93.7	84.8	71,223
C-130	DD-AWM	WW LDR	MC RATE	FLY HRS
FY-00	6.8	93.9	69.5	46,068
FY-01	7.5	95.2	73.1	50,088
FY-02	7.9	94.5	77.7	65,205
FY-03	11.4	94.7	78.9	64,152
FY-04	11.0	92.3	75.3	29,749
KC-10	DD-AWM	WW LDR	MC RATE	FLY HRS
FY-00	7.3	93.9	82.5	48,658
FY-01	6.1	94.1	82.9	45,941
FY-02	8.3	94.7	80.7	81,475
FY-03	7.4	94.4	83.0	63,026
FY-04	7.5	94.4	81.2	28,326
KC-135	DD-AWM	WW LDR	MC RATE	FLY HRS
FY-00	3.7	94.7	81.8	61,709
FY-01	4.3	95.3	83.6	62,509
FY-02	4.8	95.1	85.0	94,137
FY-03	4.9	93.4	85.2	99,511
FY-04	4.4	92.1	84.2	52,306

DD-AWM: Delayed discrepancies awaiting maintenance

WW LDR: Worldwide logistics departure reliability

MC RATE: Mission Capable Rate

Fly Hours: Total fleet flight hours

***FY04 Rates Cumulative from Oct 03-Mar 04**

Mr. BARTLETT. Does the Air Mobility Command still plan to keep 50 C-5Bs and 62 C-SAs in its inventory? What portion of this fleet is budgeted for new engine and cockpit upgrades?

General HANDY. Current Air Mobility Command (AMC) programming includes 60 C-5As, 50 C-5Bs, and 2 C-SCs. The C-5 continues to be a critical component of AMC's airlift fleet and is integral to meeting airlift mandates. However, the aircraft's enormous capacity is hampered by unacceptably low reliability and maintainability. Therefore, AMC is committed to the C-5 Avionics Modernization Program (AMP) and Reliability Enhancement and Reengining Program (RERP). Current C-5 programming includes funding for 55 AMP kits and Research, Development, Test, and Evaluation (RDT&E) funding for RERP.

As a result of the events of 9/11, the national military objectives have changed. We believe the objectives delineated in the draft National Military Strategy (NMS) increase our overall air refueling, airlift, and sealift requirements considerably. Once the Mobility Capabilities (MCS) Study is concluded, it will validate the total requirement and proper mix of aircraft to achieve a more capable, versatile, and reliable fleet. Once the correct mix of C-17s and fully modernized C-5s is validated, the necessary funding will be laid into all programs.

Mr. BARTLETT. Please describe efforts to address the man-portable air defense systems (MANPADS) threats to Air Mobility Command aircraft. Are we developing and procuring sufficient systems to address this threat?

General HANDY. Our approach has been on two fronts: (a) sustaining and improving our existing equipment which is installed on over 700 aircraft—continuing to improve our legacy missile warning system and developing new technology flares, while (b) making progress on leap-ahead technologies like Large Aircraft Infrared Countermeasures (LAIRCM).

We are procuring new technology flares today. They're not being fielded as quickly as we would like, primarily because of industrial capacity limitations. For LAIRCM, we're currently funded to install the system on 137 aircraft between now and FY2010. Initial results from an ongoing study indicate the need to expand the program to 444 aircraft with LAIRCM capability, and we're working to reach that goal.

Mr. BARTLETT. Please describe efforts to address the man-portable air defense systems (MANPADS) threats to civil reserve air fleet (CRAF) aircraft. Are we developing and procuring sufficient systems to address this threat for CRAF aircraft?

General HANDY. While we recognize the need for defensive systems on CRAF aircraft, the priority must remain on our front line Air Force aircraft. We carefully manage CRAF aircraft and where they fly in order to minimize the likelihood of a missile engagement. The Department of Homeland Security (DHS) has the lead on developing a system to protect commercial carriers, which includes the CRAF. We monitor DHS progress closely, and are pleased to see a good competition leveraging much of the hardware initially developed by the Department of Defense.

Mr. BARTLETT. Your statement noted that a new military capability study is planned to begin in June of this year, and be complete in March of 2005. However, the fiscal year 2006 budget will be submitted in February of the next year, and if we are to buy additional C-17s beyond the 180 now planned, then long lead procurement will need to begin in fiscal year 2006. Do you believe results of that study will be completed in time to impact the fiscal year 2006 budget request?

General HANDY. The results of the Mobility Capabilities Study will not be out in time to affect our budget input on the C-17. To that end, we have been working with the Joint Staff on two interim studies to help us make an informed decision in time to influence C-17 production beyond 180. These two studies, the Focused Airlift Quick Look and the Multi Theater Strategic Airlift Excursion, should provide insight on the need for additional C-17 aircraft. While these studies may not provide a definitive answer on the exact number of aircraft needed when compared to the Mobility Capabilities Study, they will provide an indication on which direction we need to go.

Mr. BARTLETT. A report delivered to the other legislative body on the relevancy of the Mobility Requirement Study for Fiscal Year 2005 (MRS-05) noted that MRS-05 no longer mirrors the current national military strategy, that the 54.5 MTM/Day airlift requirement is understated and is at least 57.4 MTM/Day with moderate risk.

Do you agree with that statement? Is that metric accepted by the Department of Defense?

General HANDY. We agree with this statement, and this is one reason why the Mobility Capabilities Study (MCS) is so important since it will allow us to address the new military strategy and the changing needs we face in a post 9/11 world.

I cannot speak for the Department of Defense, but once the MCS is finalized, we will all have a common metric to reference.

Mr. BARTLETT. The report also stated that a minimum of 222 C-17s will be required to support the national military strategy. Is that a "moderate risk" number? If so, please describe what "moderate risk" means.

General HANDY. Yes, our position is this is a moderate risk number. We feel acquiring 222 C-17 aircraft is the minimum number needed, and that the Mobility Capabilities Study should be used to determine the full airlift requirement.

Moderate risk is defined as: Must accomplish all essential tasks and must accomplish some combination of key tasks. An essential task is measurable and required to achieve an operational objective. A key task is measurable and desired to be achieved but does not define success or failure of the operational objective.

High risk is defined as: Failed to accomplish one or more essential tasks or failed to accomplish some combination of key tasks.

Mr. BARTLETT. Are more than 222 C-17s required? If so, what is that number?

General HANDY. We feel 222 is the minimum number of C-17 aircraft needed based on the Mobility Requirements Study-2005 analysis and what our experience has shown us over the last two years. The full requirement to meet the new national strategy should be determined once the Mobility Capabilities Study is completed.

Mr. BARTLETT. The report also mentions that during OEF/OIF the airlift system did not achieve the aggressive planning factors in MRS-05, but that those differences do not decrease the airlift requirement but could impact the number of aircraft needed to meet a given MTM/Day goal. Please explain how the system operated with lower aircraft payloads and less flying hours than assumed in MRS-05, but the 54.5 MTM/Day requirement should be increased?

General HANDY. The requirement to increase the airlift goal of 54.5 MTM/Day is not based on any specific aircraft capability, but rather on the actual amount and timing of cargo that needs to be moved. The current requirement of 54.5 MTM/Day was set by the mobility Requirements Study 05 and is outdated. A new requirement, which we believe will be greater than the current one, shall be established by the Mobility Capabilities Study. This study is going to take into account the new national military strategy, including the global war on terrorism and homeland defense. Once we know the actual MTM/Day requirement, we can then determine how many and what type of aircraft are needed to meet this goal.

QUESTIONS SUBMITTED BY MR. TAYLOR

Mr. TAYLOR. Stepping back one, is it your intention to equip the 130s in the Iraq theater with the Large Airframe Infrared Countermeasures? And what is your time line for that?

General HANDY. The Large Aircraft Infrared Countermeasures (LAIRCM) system just completed development testing on the first Air Mobility Command C-130. This aircraft uses a two-turret configuration with a turret on either side of the fuselage, just aft of the wing. When operational testing is complete, which we expect in mid 2004, we will begin modifying seven more C-130s to accept LAIRCM hardware for fielding late 2004 through mid 2005.

We've just completed LAIRCM modifications on the first 12 C-17s, and they are now flying missions worldwide. There is also an initiative to accelerate LAIRCM installations on 71 C-17s beginning later this year and completing by mid 2006. The Air Force has included this proposal on its FY05 Unfunded Priority List submission to Congress. The plan is to use hardware from the eight LAIRCM C-130s in order to outfit 16 of the 71 C-17s in the "Lite" single-turret configuration. In either case, there will be both C-17s and C-130s modified to accept the LAIRCM hardware, and we can, therefore, move the hardware to the aircraft where it is needed most.

QUESTIONS SUBMITTED BY MRS. JO ANN DAVIS

Mrs. DAVIS. I want to specifically ask you your thoughts on what factors might affect the balance at Military Sealift Command with regards to leasing versus owning. And what are the possible consequences that we would see down the road?

General HANDY. Military Sealift Command (MSC) presently operates 146 ships, of which, 114 are owned by the Government and 32 are chartered (the maritime term for leased) for periods of one year or more. All of these ships—the Government owned ships and all of the chartered ships—are U.S. flag vessels. Of the 32 chartered ships, 21 were built in the United States or were extensively converted in U.S. shipyards, and 11 were built overseas and did not undergo substantial U.S. shipyard conversion work. Present plans are to replace 13 of the chartered ships involved in prepositioning military cargo abroad with a new class of vessel known as the Maritime Prepositioning Force Future (MPF-F). These ships will be owned by the Navy and built in U.S. shipyards.

The ability to charter allows the Navy to meet requirements with commercially available ships that can be returned to their owners with no large capital expense incurred by the Government. Without the ability to charter some ships for short periods (one to five years), the Navy would be unable to meet its ever-evolving transportation requirements. Moreover, all MSC charters accord a preference for U.S. flag vessels, as required by law. Those U.S. flag vessels are required to be crewed by American citizen mariners and the ships must conform with all U.S. regulations. Therefore, the chartering of U.S. flag ships supports the U.S. merchant marine mobilization base upon which the Department of Defense relies. Without the flexibility to charter such ships for reasonable periods, it would be difficult or impossible to put the needed ships to sea to meet mission requirements. The Navy's continued transportation readiness depends on such flexibility.

The analysis of whether to lease or buy can raise difficult questions. For example, MSC presently has short-term (less than five year) leases for small (approximately 2,000 twenty foot equivalent units (TEUs)) containerships for use in prepositioning ammunition. By 2006, MSC anticipates having a requirement for a total of 11 such containerships (four for the Air Force, six for the Army, and one for the Navy). There are essentially three options for meeting this requirement: (1) utilize leases of less than five years to charter U.S. flagged containerships from the open market, (2) enter into long term charters (10 to 12 years or more) to induce the construction of new, U.S. built containerships by private operators, and (3) Government purchase of newly built containerships for operation by commercial ship operating companies.

Option 1 is the status quo and provides MSC the greatest flexibility to ensure the right sized fleet is available to meet the requirements of its military customers. Option 2 is very difficult to justify within current statutes and regulations. Having industry build commercial assets is reasonable, but long-term leases can result in the government paying a substantial portion of the capital investment for an asset and receiving nothing for its investment at the end of the lease.

Option 3 is the most expensive and provides the government the least amount of flexibility. The commercial shipbuilding industry estimates the cost of building a new "off the shelf" 2000 TEU containership ship in the U.S. would be about \$150 million. Any modifications made to the design of such a ship to add additional military features would increase the cost. If the \$150 million cost were amortized across 30 years carrying the interest rate of current Treasury 30-year bonds, the daily cost would be approximately \$26,500 per day. The equivalent cost of the ships MSC currently charters is approximately \$15,000 per day (the estimated asset portion of a larger "time charter" rate). The cost differential would equate to approximately \$4.2 million per ship per year. Ships are built to last thirty years or more. Building such a ship to meet a five-year requirement would be both impractical and improvident. Along-lead shipbuilding program would also not be able to respond to near term requirements. Additionally, building a thirty-year ship that is only needed for five years is not cost efficient. Ultimately, building commercial containerships for government ownership would redirect the Navy's shipbuilding funds that are vitally needed for naval combatant ship construction, all of which is accomplished in U.S. shipyards.

The Navy has shifted from chartering to building when long-term needs arise. One case is the potential construction of the MPF-F ships, mentioned above. Another is the Large Medium Speed Roll-on/Roll-off (LMSR) ship program. The Navy had to charter scores of foreign roll-on/roll-off ships during Operation DESERT STORM because very few of those ships operated in the U.S. flag trades. In the aftermath of DESERT STORM, LMSR ships were built (in U.S. shipyards) and, as a result, relatively few foreign-flag ships were needed during Operation IRAQI FREEDOM.

Mrs. DAVIS. Like my colleague over here, Mr. Taylor, I am very concerned about our industrial base and where we are going. I also have a keen interest in the Ready Reserve fleet. So I do not mind MARAD having ships there that are ready to go in reserve that are usable.

I do have problems with some of the ones that are there now, and I cannot imagine you would want to use them.

General HANDY. The Ready Reserve Force (RRF) is the premium portion of the National Defense Reserve Fleet (NDRF). The Defense Transportation System depends upon the inventory of RRF ships as a major part of the Strategic Sealift Mobility Force. From a United States Transportation Command (USTRANSCOM) perspective, we do not have a requirement for the non-RRF vessels in the NDRF. If we did, they would be funded as part of the RRF and maintained in a higher state of readiness. At USTRANSCOM, we constantly evaluate the inventory of ships within the RRF against the requirements of our customers. Our current evaluation is leading us toward downgrading some of the break-bulk and barge type ships. Further, we expect that the cost savings gained through the downgrading of these ships would be utilized toward the recapitalization of the RRF with newer more capable Roll on Roll off ships.

QUESTIONS SUBMITTED BY MR. SAXTON

Mr. SAXTON. Option number two is to slow down the retirement of C-141s. Well, that may have been done retired. I think we have got nine left in the active fleet. How many are left in the active fleet?

General HANDY. There are currently seven C-141 aircraft in the active fleet—six Primary Mission Aircraft Inventory (PMAI) and one Backup Aircraft Inventory (BAI). All seven are located at McGuire Air Force Base, New Jersey, and all are B Models. There is no funding for those aircraft in the FY05 President's Budget. Therefore, they will be retired no later than September 30, 2004.

QUESTIONS SUBMITTED BY MR. ABERCROMBIE

Mr. ABERCROMBIE. Well, for the record, if you would care to: Do you have an opinion on charter and build as a concept? And as possibly a useful response in the context of the chairman's question, I would be glad to receive it. I do not think that you have to be speaking for the administration or anything else.

But on the charter and build concept, I would really be pleased, and I think it would help the chairman with his question about what we need to do and what we need to consider.

General HANDY. Beginning with the replacement of our aging sealift fleet, the Fast Sealift Ships and the Ready Reserve Force Roll on Roll off ships, we must acquire the fast, flexible sealift capabilities that I have described in response to this committee's questions. I believe the "charter and build" concept to be one of the possible acquisition strategies that must be examined. This acquisition method, however, would require some legislation due to the current restriction on length of charters to five years. Historically, purchasing rather than chartering ships that are needed long term proves to be more cost effective. I still believe there may be a need to consider the charter option for our near term solutions of recapitalization due to the unproven and undeveloped technologies associated with strategic capable high speed sealift.

Mr. ABERCROMBIE. General, you said that some of the assumptions in earlier mobility studies, such as immediate callup of reserve forces and mobilization of CRAF, were overly optimistic and not supported by actual experience. Have you advocated excluding them from the terms of reference document for the Mobility Capabilities Study? Do you expect to win that argument? And what is the status of the MCS terms of reference?

General HANDY. The United States Transportation Command (USTRANSCOM) will coordinate on the Mobility Capability Study (MCS) Terms of Reference that the Office of Secretary of Defense (OSD) and Joint Staff Co-leads provide (Expected by late Apr 04). We anticipate similar optimistic assumptions regarding immediate callup of reserve forces and mobilization of Civil Reserve Air Fleet (CRAF). Previous Mobility Requirements Study (MRS) studies did not utilize experience following Desert Storm with 30-day reserve callup, and no CRAF III or CRAF II activation 30 days into the scenario. If optimistic assumptions are used in the Mobility Capability Study, USTRANSCOM will insist members are aware that the results will lend themselves to a minimum capability required solution and that the documentation carries the same message referencing actual experience.

FISCAL YEAR 2005 NATIONAL DEFENSE AUTHORIZATION ACT—NAVY FORCE STRUCTURE AND SHIP CONSTRUCTION

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROJECTION FORCES SUBCOMMITTEE,
Washington, DC, Tuesday, March 30, 2004.

The subcommittee met, pursuant to call, at 1:05 p.m., in room 2212, Rayburn House Office Building, Hon. Roscoe Bartlett (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. ROSCOE BARTLETT, A REPRESENTATIVE FROM MARYLAND, CHAIRMAN, PROJECTION FORCES SUBCOMMITTEE

Mr. BARTLETT. The subcommittee will come to order.

This afternoon we will receive testimony from witnesses representing the Department of the Navy, the Congressional Research Service and the shipbuilding industry on the President's fiscal year 2005 budget request for the Navy's shipbuilding program and force structure.

Before we proceed, I would like to commend our men and women serving in all of our military services throughout the world, coalition personnel and those supporting them, for their dedication and professionalism.

The security challenges confronting our nation today are complex. We face the necessity to balance the expenditures to meet today's military requirements with the investment for the future through research and development. We also face the necessity to reach the proper balance between required capabilities and maintaining the shipbuilding industrial base, within our constrained resources.

Our purpose today is to ensure that, for fiscal year 2005 and beyond, the Navy and Marine Corps continue to be provided the proper resources to achieve the right balance of force structure and capabilities to meet new challenges that surely lay ahead.

Fundamental to this issue is determining what the present and projected threats are and deriving from the best available information what capabilities are required to meet those threats. As was demonstrated in both Operation Enduring Freedom and Operation Iraqi Freedom, any future conflict will require the contribution of all the military services.

This means, as we seek to determine what capabilities are required by the Navy and Marine Corps, we must also bear in mind the contributions of the other Services.

In my mind, we have no peer adversary now. And I question if we will have one in the foreseeable future.

Lacking a major threat, in my opinion, this nation should increase emphasis on research and development of truly innovative capabilities for the future rather than rushing to field the next generation capability immediately.

Secretary Young, I am very pleased that you have agreed to be with us today. I want to continue our dialog from our recent hearing on research and development to gain a sense that the Navy's emerging force structure results from valid, realistic requirements and new concepts of operation rather than seeking an arbitrary number of ships in the force structure.

I have a number of concerns. To mention a few: In my view, given state-of-the-art technology available, we have too many people on our ships. Further, we seem to have a new plan every year for how many and what type of ships we want to build. Finally, costs seem to be an independent variable—ship costs seem to grow dramatically with each year's budget submission.

Secretary Young, I look forward to your testimony and comments, and those of the other witnesses, on the details of the process that gets us to the mix of ships—numbers, size, missions and so forth—that are assumed in this budget.

As we begin this hearing today, the U. S. Navy now operates a combat fleet of about 291 surface ships and submarines, although the recent Quadrennial Defense Review (QDR) recommended a force structure that equates to approximately 310 ships. The budget request includes a forecast of a low of 290 ships in fiscal year 2005, before rising to 309 by fiscal year 2009.

While some argue that the end of the Cold War and the improved combat capabilities of today's modern warships permit a much smaller Navy than would have been required only a decade ago, it is important to note that the Navy's peacetime forward presence requirements have not changed significantly since the end of the Cold War. Indeed, in some respects, those presence requirements for today's smaller Navy have increased as illustrated by continuing large-scale presence missions in the Mediterranean, the Western Pacific, the Indian Ocean and, most recently, in the Persian Gulf region during Operations Enduring Freedom and Iraqi Freedom.

For fiscal year 2005, the Navy's shipbuilding budget request is \$11.1 billion. This year, the budget request includes nine new ships. From fiscal years 2005 through 2009, 48 new construction ships are planned.

To accomplish this objective, we will need to overcome challenges to the increased costs of new construction such as those in the *Virginia* Class submarine and the LPD-17 programs.

To address these and other important Navy force projection issues, I would like to welcome today's witnesses. We have: first, the Honorable John J. Young, Jr., Assistant Secretary of the Navy for Research, Development and Acquisition; second, Vice Admiral John J. Nathman, U.S. Navy Deputy Chief of Naval Operations for Warfare Requirements and Programs; Vice Admiral James C. Dawson, Deputy Chief of Naval Operations for Resources, Requirements

and Assessments; and finally at the witness table, Ms. Cynthia Brown, President, American Shipbuilding Association.

Before we begin, let me call on my friend, the gentleman from Mississippi, the ranking member of the subcommittee, Gene Taylor, for any remarks that he would like to make.

[The prepared statement of Mr. Bartlett can be found in the Appendix on page 349.]

STATEMENT OF HON. GENE TAYLOR, A REPRESENTATIVE FROM MISSISSIPPI, RANKING MEMBER, PROJECTION FORCES SUBCOMMITTEE

Mr. TAYLOR. Thank you, Mr. Chairman. And I very much appreciate you calling this hearing.

I would hope it should not be a surprise to anyone in this room that I think the fleet is too small, that we are retiring ships that are too young, and that on occasion we have been way too quick to charter foreign-flag vessels for use. And I do have serious concerns about the industrial base as we grapple with the need to maintain our nation's industrial base with our budgetary constraints.

And quite frankly, with the new technologies that come along, it is my concern that as we search for these new technologies, we delay the acquisition of the vessels, we stop acquiring the vessels that we are making and that the industrial base—and in particular those people who work in those industries—suffer in the meantime.

So I would hope we would have an opportunity to address some of these things. Again, we have a great panel of witnesses. I am looking forward to hearing from them all.

Mr. BARTLETT. Thank you.

Ms. Brown, your written testimony and those of the other witnesses will, without objection, be entered into the hearing record. Please proceed with your opening remarks so we have an adequate opportunity for members' questions.

STATEMENT OF CYNTHIA BROWN, PRESIDENT, AMERICAN SHIPBUILDING ASSOCIATION

Ms. BROWN. Thank you, Mr. Chairman, thank you, Congressman Taylor, for this opportunity to testify today and all members of this subcommittee, thank you.

If I could, Mr. Chairman, I would like to say that I have—I noticed in the room you do not have a picture of a ship. And if I could loan this hearing room a picture, I would like to do so, so that we can have a ship on display.

The American Shipbuilding Association (ASA) is the national trade association of the six largest shipbuilders in the United States that build all of the capital ships for the United States Navy. We also represent 30 companies that are dedicated to the manufacture, design and service of critical ship systems and components.

The shipbuilding industry is in every state of the Union but for three. And I am happy to say that every member of this subcommittee has shipbuilding companies in your districts and your states.

This subcommittee is well aware that fleet commanders have, for many years now, been calling for a much larger and more capable fleet than the 294-or 291-ship Navy that we have today. While their stated requirements have ranged from as high as 400 ships, the lowest level on record is the 310 ships called for in the 2001 Department of Defense (DOD) Quadrennial Defense Review. That study also acknowledged risks associated with a fleet of that limited size.

Alarmingly, the fleet has already shrunk well below the minimum risk constrained requirement.

One only has to look at the war in Iraq to understand that America needs a larger and more capable fleet. For the initial phase of the war, which was of relatively short duration, 70 percent of the Navy's surface fleet and 50 percent of its submarine fleet were deployed to Iraq.

The remaining ships were either undergoing repair, defending our homeland or engaged in security patrols in other troubled regions of the world. This deployment rate was the highest since World War II. And it underscored why our naval fleet is stretched too thin.

The fleet has been cut in half since 1987. As the fleet has shrunk, there has been a corresponding decline in the defense shipbuilding industrial base.

The average ship production rate enters the 13th year of just 6 new ships a year. Six ships a year is the lowest naval production rate since 1932.

Thirteen years, however, is a historical first for the most prolonged period of such low production rates. If these shipbuilding budgets continue, the nation will witness the continued diminution of the fleet. And America will lose the industrial capability to ever rebuild her.

I might add that, over the past 4 years, the average DOD budget has been increased by 28 percent. Yet naval shipbuilding has been cut by an average of 22.3 percent.

Since the fall of the Berlin Wall, the defense shipbuilding industry of this country has been reduced by more than half. More than 30,000 jobs for our highly trained engineers and production people in the shipyards have been eliminated. And more than 150,000 skilled engineers and manufacturers have lost their jobs throughout the supplier base.

A decade-and-a-half of underinvestment in naval power has left the country with just two shipyards to design and build nuclear warships, two to design and build surface combatants and two to design and build our auxiliary and combat logistics force ships. The loss of any of these six remaining shipyards will result in only one source for these highly sophisticated ships.

In the supplier base, we used to have two or three manufacturers of each of the many critical ship systems and components. Today, only one remains for each of many of these components. And that remaining manufacturer is often hanging by a thread.

For example, 75 percent of the critical component manufacturers on the *Virginia* Class of submarines are the last and only source of their product.

In short, the fragility of the defense shipbuilding industrial base cannot be overstated or ignored. This alarming security situation means that any disruption, delay or reduction in shipbuilding production programs will have significant cost implications for every program in the Navy's budget and immense implications for our nation's future as a sea power.

There are several recent examples to demonstrate this fragility. Last year's Department of Defense budget proposed gapping the LPD-17 program by one year.

Congress—thank you—you reversed this decision. Had you not, the shipyard would have been forced to lay off more than 2,000 highly trained shipbuilders. This would have raised the shipyard's cost in building future LPD-17s because of the investment it would have had to make to recruit and train 2,000 new employees when scheduled production resumed.

Yes, some of the former employees would have returned; but others would not. A year gap would have impacted productivity of the returning skilled workforce. And it would have taken years to train the new hires to achieve the skill level of the employees they replaced.

It costs a minimum of \$50,000 to recruit and train each shipyard production worker to achieve the minimum proficiency in their trade. Multiply this figure by thousands and it is easy to understand the high cost of training. Shipbuilding disruptions cost money—costs which are passed on to the taxpayer in higher priced ships.

In the supplier base, that one-year gap in orders for LPD critical ship system components could have forced some companies out of business. And it would have significantly raised the cost of components not only for the LPD-17 program, but for other ship programs for which they also supply components and systems.

We cannot afford to have history repeat itself. In the late 1980s, the Navy decided to end production of the *Los Angeles* Class of attack submarines as it transitioned to the final design and production start of the *Sea Wolf* Class.

When the Soviet Union fell, the *Sea Wolf* program was canceled after just three boats. The sudden and dramatic break in submarine production, before the follow-on SSN-774 was ready to move into production, brought the submarine industrial base to its knees.

The *Sea Wolf* builders were forced to lay off thousands of people and re-engineer the shipyard to survive low rates of production in the transition to the next submarine program. Hundreds of critical system and component manufacturers were forced out of business. And those that survived the hiatus did so as much smaller companies.

Early termination of the *Sea Wolf* program also drove up the unit cost of each *Sea Wolf* because there were only three boats to help absorb the research, the development and the overhead costs of the entire shipbuilding supplier base.

It was a struggle for survival that came at a high cost to the nation. The country has yet to recover from this cost because of the continued production of just one SSN-774 a year.

The Navy's Future Year Defense Plan (FYDP) proposes the construction of nine new ships in fiscal year 2005, with the most notable addition being the first ship of the new class of DD(X) destroyers. The American Shipbuilding Association commends the administration for the increased numbers of ships proposed in 2005 over previous years and strongly supports the budget request.

There are, however, very serious industrial and security risks associated with the budget in 2006 as the number of ships again drops to six.

In 2006, there are zero multi-mission surface combatants in the budget. The budget terminates production of the DDG-51 at the end of 2005 as detail design for the DD(X) begins with construction commencement of the first ship of the class in mid-2007.

This year-and-a-half production gap poses a tremendous risk to the naval shipbuilding industrial base. If extended, this gap will result in thousands of job losses in both surface combatant yards and their suppliers as the industry transitions from a mature production program of the DDG-51s to the new class of destroyers.

It is imperative that Congress support the schedule and full funding of the DD(X) program.

As I stated earlier, all of you on this subcommittee have shipbuilding companies in your districts. I would urge you to reach out to them to find out what the impact or the effect of this transition will be on them.

The other shortfall in the Future Year Defense Plan is the submarine program. Production of the *Virginia* Class needs to be increased to two per year as soon as possible to realize reduced unit costs for each submarine and to stabilize the specialty nuclear manufacturers.

In closing, I would like to point out that since the mid-1990s, my industry has consistently stressed—to the Department of Defense, to Congress and to anyone who will listen—the urgent need for higher, stable rates of naval ship production. I make this same plea to you today for one purpose and one purpose only: national security.

Look at Great Britain, which ceased to invest in sea power and ceased to be a world power. As a result, Great Britain did not have a Navy capable of projecting sufficient power to South America in the 1980s to defend the Falkland Islands against a relatively small country with a very small military. Great Britain ultimately succeeded in the Falklands because of the help of the United States.

Every day the nation delays in making investment in our naval fleet a priority, the country loses people from the skill base and facilities essential to our national security. Stretched and gapped programs dramatically escalate the cost of naval ships.

It takes three to seven years to construct each of our highly sophisticated and survivable warships. It takes the same number of years, if not longer, to train our highly skilled workforce. And the industry as a whole represents a capital investment of billions and billions of dollars.

When America loses its shipbuilding industry, the United States will be forced to depend upon other countries to build and maintain a naval fleet to defend our homeland and our economic security interests. What country can we rely on to defend us?

The fastest growing shipbuilding country in the world is China. The fastest growing economy is China. And China is investing heavily in building her naval power.

Will China defend America?

I want to commend Representatives Jo Ann Davis and Gene Taylor for sponsoring H.R. 375, which states that it is the national policy to build and maintain a naval fleet of at least 375 ships as soon as possible. Mr. Chairman, I want to thank you for cosponsoring this legislation and for every other member of this subcommittee who has cosponsored it. It is extremely important legislation that I hope the committee will have a hearing on.

You can all act today to reverse the course of our nation by passing H.R. 375.

Thank you very much, Mr. Chairman.

[The prepared statement of Ms. Brown can be found in the Appendix on page 356.]

Mr. BARTLETT. Thank you very much for your testimony.

Mr. Taylor.

Mr. TAYLOR. Ms. Brown, thank you for being here today. And you touched on a lot of important subjects.

I was wondering, in previous conversations you have touched on the subject of the leasing of foreign vessels and how every one that is leased is one less that will be built by a domestic supplier. I understand that for budgetary reasons—and I hope you can explain this to the committee—that DOD chooses to lease them for 69 months; and therefore, it is not scored. And in some instances, they have turned right around after a lease expires and done it again.

In your opinion, what has been the net effect of that? And do we, at some point, much like the tanker issue that has gone on with the Air Force, do we end up paying more for something that we lease than something we could have bought domestically?

Ms. BROWN. Thank you, sir.

The leasing practices of the Department of Defense are of great concern to the shipbuilding industry because they are not short-term leases to meet short-term requirements or a surge requirement or a contingency. But they are very long-term leases. They are, in essence, a form of acquisition, which Congress expressed dire concern over in 1990 with the Budget Enforcement Act, about the need when it was demonstrated, that the cost to procure is less than the cost to lease.

And what is happening in the 59-month period, is that if you lease for 59 months, you do not run up against the scoring laws—or scoring regulations, actually—by OMB that require you to score the entire capital cost of the ship in the first year in which you lease it for the entire period of the lease, including the operating costs, the fuel costs.

Subsequently is that we are seeing a greater reliance on leasing foreign-built ships for 59 months, 1 month short of 5 years, and then turning around and seeing that same ship leased again for another 5 years. In my view, a 10-year lease is a long-term commitment. And it is hurting further the industrial base of this country.

Mr. TAYLOR. How many ships fall into that category, to the best of your knowledge?

Ms. BROWN. I do not have the total number. But I do know that if we look at the list from the Military Sealift Command, at the most recent list that I have—which is somewhat dated; they update it every year—there are roughly nine ships that fall into that category. They were all built in South Korea.

There are also, there has been a recent phenomenon where we have been leasing—seeing the lease of high-speed vessels built in Australia. The Army has three; the Navy and the Marine Corps have two.

Those vessels were leased for the purpose of a pilot program for experimental purposes. My concern is: how many do you need for experimental purposes? And also, those vessels were deployed in Iraq.

Mr. TAYLOR. I would like to relay to you two conversations that I had. One is—and I am going to give him the opportunity to correct me if I misspoke. But sitting behind you is Secretary Young. And I thought I heard Secretary Young say that he felt like the DD(X) acquisition was on track, except for he had some concerns about the supplier not being able to deliver on time.

Interestingly enough, I had an opportunity—just by the luck of the draw, to sit next to a chief engineer for one of the suppliers on a flight up here recently. And I relayed my conversation with Secretary Young, to which the gentleman said, “Well, heck, if they would ever just tell us what the finished—when they would just bless something as the final product, we will go up and draw the plans. The problem is, every time we think we are getting close to a final product, the Navy adds one more thing and that changes everything down the line.”

My question to you is, speaking with the people that you represent, is this a common frustration? Do you see this on a regular basis? Or is this just a one-time episode dealing with the DD(X)?

Ms. BROWN. I think it is a common practice when you are transitioning—when you are designing and developing a new class of ship. And this class of ship is going to be a superb class.

It is going to be very technologically advanced, to incorporate many of the technologies, such as electric drive and the ability to reduce manning. And it will be a quantum leap in technology. Any time you are developing new technologies, there is that problem, I believe, with a new class of ships, especially one as technologically advanced as this one is.

I think that the one thing with that is that it is important, since you refer to the supplier companies, that while there is the year-and-a-half gap before the fabrication of the DD(X) will begin for the shipyards, there is a longer gap for the supplier base because you do not order everything that goes into that ship on the year in which fabrication begins.

And that is a very high-risk situation for many companies.

Mr. TAYLOR. I see the red light. Thank you very much.

Thank you, Ms. Brown.

Mr. BARTLETT. Thank you.

Mrs. Davis.

Mrs. JO ANN DAVIS OF VIRGINIA. Thank you, Mr. Chairman.

And thank you, Ms. Brown, for being here to testify.

Let me just start out by saying that the number of ships that I think we need has nothing to do with the shipyard that builds the carriers being in my neighboring district. It is not in my district. But it has everything to do with the fact that, in speaking to many members of the Navy, including Admiral Clark on record in the full Armed Services Committee.

When I have asked him, "What is the number of ships that the Navy needs?" And I have asked him, "Is 375 right?" And on record, he said, "It is about right."

Having said that, the issue to me has a lot to do with what you have said. I hope and pray that this Congress does not allow it to get to the point where our naval ships are built in China or any other country other than the United States of America. The thought of sending our sailors and marines out on a ship built in China just does not sit too well with me.

Having said that, you touched on an issue that is a little bit of concern to me, and that is the—the DD(X) is what we are going to, but what we have now? The DDG-51. The DDG-51, and you have that year-and-a-half break.

You said it would be a problem to the suppliers and to the industrial base. What does it do to our industrial base to have that year-and-a-half gap? What does that mean to our suppliers and our industrial base?

Ms. BROWN. Well, I think, as Secretary Young will stress to you, that it is critical that DD(X) remain on schedule, that there be no further gap than the year-and-a-half. Because it is going to be the shipbuilding, both the shipyards and the supplier base, if there is any schedule slippage whatsoever. It will be devastating to this industry.

I cannot understate that.

Mrs. JO ANN DAVIS OF VIRGINIA. The year-and-a-half is not a problem?

Ms. BROWN. If there is any slippage past the year-and-a-half. There is a different story for the supplier base because for them, as I stated to Congressman Taylor, it is not just a year-and-a-half gap for many of them. It is a longer gap.

And I would encourage you and every member of the committee to reach out to your shipbuilding constituents in your districts to find out what that gap will mean to them.

Mrs. JO ANN DAVIS OF VIRGINIA. In speaking to the head guys at Northrop Grumman who produce shipbuilding and the concern of losing our industrial base, what they tell me is when we lose those designers, those engineers, they do not come back because they go out and they get another job. And they do not come back.

And that is their biggest concern, is losing those folks.

And Mr. Chairman, that is exactly why I am so concerned about our shipbuilding industrial base. It is why I am concerned about the number of ships that we have.

I hope, Mr. Chairman, that you will stand with me on this and that we will have a hearing on H.R. 375 and that we do not get to the point, at sometime in my lifetime and your lifetime, where we are sending our sailors out on a ship built in China. That just—and I do not think you want that to happen either.

Thank you so much, Mr. Chairman.

Mr. BARTLETT. Thank you very much. And a little later, we will have an opportunity to talk about the 375-ship Navy and where we go from here.

But the next person on our queue here is Mr. Kline.

Mr. KLINE. Thank you, Mr. Chairman.

Thank you, Ms. Brown, for being here. It is a pleasure to see you.

I want to pick up where Mrs. Davis was going with her question about the gap. We had the Navy/Marine Caucus luncheon the other day and had a chance to hear from the Secretary of the Navy and the Chief of Naval Operations the concern about the funding gap in DD(X), having to do with the provision of having to fully pay for the ship in the year that it goes in.

I was trying to understand the impact that is going to happen. When the DDG-51 stops, we start DD(X) and then have the funding gap and then move—we hope—to full production.

What literally happens in the shipyards when we reach that point?

Ms. BROWN. Well, the gap that we are talking about is the DD(X), the first DD(X) is funded in 2006. And there is a gap not because of lack of funding; there is a gap automatically when you go design a new class of ships, you are doing the detailed design.

And so right now, the schedule is that fabrication of the ship will actually begin in mid-2007. So there is a year-and-a-half gap, not because of the funding gap, but because of the development time that is required. And that is why it is so important to keep DD(X) on schedule and fully funded.

This impact on the shipyards is going to be that you are going to see winding down of production as you start to wind up new design and technology, so that you are going to have to be forced to lay off thousands of your production workers in that gap period. That is the concern there. And that is why the ASA so strongly supports making sure that DD(X) is fully funded and that schedule is held to.

Mr. KLINE. Excuse me for interrupting. If it is fully funded and the schedule is held to, what you are describing now which starts fabrication in 2007, there is still a gap, though, right?

Ms. BROWN. Yes, sir. There is a gap.

Mr. KLINE. Okay, that is what I am trying to—

Ms. BROWN. That is a year-and-a-half gap.

Mr. KLINE. At the best.

Ms. BROWN. At the best.

Mr. KLINE. Unless you were, for example, to continue building DDG-51, which is not anywhere in the schedule. But we are going to have the gap, even at the best of circumstances. Is that right?

Ms. BROWN. Yes, sir. And that gap is going to be longer for the supplier base.

Mr. KLINE. Right.

Ms. BROWN. So you hit.

Mr. KLINE. Okay. I got it. Thank you. Thank you very much.

Thank you, Mr. Chairman.

Mr. BARTLETT. Thank you very much.

Mr. Schrock.

Mr. SCHROCK. Thank you very much. Before I make a statement, let me comment on one thing Mr. Kline said. I agree with him on the 2006 problem.

But I think, as I recall during the Navy/Marine Corps Caucus last week, the SECNAV acknowledged the 2006 shipbuilding plan needed a look at, and he was going to fix it. So there is clearly some acknowledgment of that.

Let me first thank Ms. Brown and all the witnesses for appearing here today to provide their insight into planning for the Navy of the future. I believe the tremendous success of the Navy and Marine Corps team during Operation Iraqi Freedom and Operation Enduring Freedom is indicative of the good return on the investment our nation has made in our military and to the high caliber of their uniformed and civilian leadership.

I believe the Navy's budget request is a practical and forward-looking plan that will operationalize the Sea Power 21 vision and goals and prepare the Navy to continue to do the nation's bidding. I am also very aware that the Navy and the Department of Defense have sent conflicting messages on the number of ships required in the fleet.

This creates uncertainty for American shipbuilders, which is harmful to their ability to plan and manage their industry. In that spirit, I urge the Navy to continue to pursue better planning and process management practices.

And I am concerned with the lengthy delays and rising costs that seem to infect all of our weapons procurement programs. As a nation, we just simply cannot afford that anymore.

We must break the code on developing the new platforms we badly need within a reasonable timeframe and for a final cost that is close to their original prediction. Our ability to plan for the force of the future will hinge on our success. And I hope the debate we are having here today will contribute to that effort.

Ms. Brown, I want to thank you for bringing to this debate an understanding of the effects the decisions we are making have on the industry you represent. As you know, I have chosen not to co-sponsor H.R. 375 because I do not believe Congress has been shown a credible case that the 375-ship Navy is required to meet the future threats.

I fully acknowledge the conflicting signals that Navy and DOD have sent with regard to how many ships they desire and the hardship that uncertainty may cause for the industries that you represent.

You will find no bigger fan of Admiral Vern Clark in Congress than this guy right here. I believe the vision and flexibility the Navy has demonstrated are indicative of how well they have handled the challenges they are facing.

My question for you is: if the Navy and DOD were to publicly reach a consensus on the number of ships required and that number was closer to 310 than 375, would that number be sufficient to sustain the shipbuilding industry? And if not, why should this committee set a goal for shipbuilding without a threat analysis that indicates such a large fleet is required and, in turn, reduce our flexibility to invest in the areas that counter the most urgent threats?

Ms. BROWN. Thank you very much, Congressman Schrock. And I have a great deal of respect for you and for all that you are doing on the committee and in the caucus, the Navy/Marine Corps Caucus.

I would like to refer—so many times in this town, we talk about studies. We always want to study something. And of course, we have studied the shipbuilding industrial base to death.

Mr. SCHROCK. To death, yeah.

Ms. BROWN. And many times, we have studied the requirements of our nation—security requirements—to death. Let me just put forth several of the studies that have been done on force structure requirements.

There was, of course, it started out with the 1997 Quadrennial Defense Review, which came out with a 310-ship Navy, which said it was a risk-constrained Navy. Subsequent to that, we had the fleet commanders testifying before the Senate Armed Services Committee, the House Armed Services Committee and every other committee here about how they could not continue to execute their military strategy with the fleet that they had at the time of 346 ships because the OPTEMPO (Operations Tempo) had increased 300 times while the fleet had been going down from 594.

Then there was the 2000 secretary of defense report to Congress on a 30-year shipbuilding plan that was submitted. “Mitigating Future Risk” was the title. And it called for a 360-ship Navy.

In 2001, there was a Navy force structure—of course, the 2000-2001, the Navy submitted its force structure requirements to the Department of Defense for the 2001 QDR process. That input, I would urge the committee to have Admiral Sestak, who led that team, come and testify.

My understanding from what I know—it was classified, but what he said to me was it was recommending a fleet of 360 to 400 ships. Following that, there was the 2001 joint chiefs of staff submarine force structure study, which said we needed a submarine fleet of attack submarines, I believe the number went as high as 72 and higher.

Then there was the 2001 surface combatant force structure study that said we needed a surface combatant fleet of 135 ships. The Marine Corps has long had a stated requirement, publicly before the committees, that it has a requirement to lift three Marine expeditionary brigades. That equates to 15 amphibious ready groups.

There have been many, many more studies. So sometimes, Congressman, I say that if you do not like the answer in one study, go back and study it again. And you can study away the requirement. But I will leave it at that.

Mr. SCHROCK. Mr. Chairman, let me just finish. I agree with you. Conflicting reports have been sent. But I think the latest QDR said 310, I believe.

Ms. BROWN. That is correct.

Mr. SCHROCK. Yeah, okay.

Ms. BROWN. But the input was higher.

Mr. SCHROCK. Okay. Again, if the Navy and DOD got together and said 310 was closer than 375, how would that impact the bases, as far as you are concerned?

Ms. BROWN. Oh, yes, sir. Yes, sir. As far as the industrial base, the Navy has not been budgeting—or let me say it is not really the Navy, because that is not fair. The Department of Defense has not been budgeting for adequately to build or maintain a 300-ship Navy. That is why we are at 294.

It takes 10 ships a year, every year, for 30 years, to build and maintain a 300-ship Navy. The build rate has been at six for 13 years, as I stated.

If we look into the out years, over the FYDP, as the chairman correctly pointed out, that the Future Year Defense Plan calls for an average of, I guess, 48 ships. So if you average it out, it is 9.2. I do not know what a .2 ship is, but an average of nine ships a year.

Mr. SCHROCK. The tail and the bow, that is about it.

Ms. BROWN. Right. The only way that you achieve that 9 ships a year average is because in year 2009, there are 17 ships. The out years have never become the now years.

So the question, I guess, is 10 ships a year—the sustained steady rate of 10 ships a year would be a tremendous infusion of business for the industry. And it would sustain the industry and stop the job losses and the skill losses. Absolutely.

But we are not there. And we have not been there.

Mr. SCHROCK. Yeah, I know you do not blame the Navy. And I am not sure I want to blame DOD. The people I think we need to blame are the people that sit behind these nameplates. We are the ones that could make this happen if we wanted to.

Thank you, Mr. Chairman.

Mr. BARTLETT. Thank you very much.

Mr. Calvert.

Mr. CALVERT. Thank you, Mr. Chairman. I do not know if my microphone works or not. I got here late, so I apologize. So you may have brought this up in your testimony.

Certainly, we are looking at our capabilities and our stable rate of production and the types of ships that we are building right now versus the types of ships that the Navy foresees building as far as potential capability is concerned, to have flexibility and to transform the Navy. When you are looking at the Littoral Combat Ship (LCS) as a potential ship that will be replacing some of the capability for the Navy, do you look at that as part of that nine or ten ship number that you look at annually under construction?

Ms. BROWN. Yes, sir. The Navy's combat, the battle force, is comprised of every warship and combat logistics force structure, all the ships that run with the fleet to resupply the fleet. That is the number.

And yes, the chief of naval operations and the secretary of the Navy do count the littoral combat ship in that total force structure.

Mr. CALVERT. Your industry does that also? Does your industry—some of these smaller, more flexible ships that have the ability to change its mission, supposedly giving more flexibility, I guess, the end result having less ships to do more things.

Ms. BROWN. I can only say that the industrial base that the Navy, that the nation depend on today, to build our combat ships will not be—will not be—the same one that builds the littoral combat ship.

Mr. CALVERT. Thank you, Mr. Chairman.

Mr. BARTLETT. Thank you.

Mr. Langevin. Thank you very much.

I want to thank you very much for your testimony. Each year, I sign on to Ron Paul's bill to get us out of the U.N., not because I am certain that we need to get out of the U.N., because I am certain that we need a discussion of that subject because America is deeply divided. And I believe that if all the facts were on the table, we would not be so deeply divided on the U.N.

For pretty much the same reason, I signed on to H.R. 375, not because I necessarily believe that we need a 375-ship Navy, but because I believe we really need a discussion of that subject. Of course, what we really ought to be talking about is capability, rather than number of ships.

If you want a Navy of 375 LCSs, that is very different than a Navy of 375 carriers, is it not? So I think that when you are talking about numbers, you really need to associate capabilities with those numbers. And I think that we do need a discussion of that.

We clearly need a rational way to decide what size industrial base we need for the security interests of our country. I have not witnessed that we have a rational way of deciding that.

Doing what we are doing here and doing what we did last year and what we probably will do next year, lamenting the fact that we are losing people and we have gaps and so forth, is not getting us to a rational deliberation as to what size industrial base we need. Clearly, today's military is enormously more capable than it was just a decade ago.

With our intelligence, with our sophisticated guided weapons and so forth, we are very much more effective than we were a decade ago. All this needs to be factored in, in deciding how large an industrial base we need and how many ships we need in our Navy.

I am not so sure but what we may need more than 375 ships, but not the kind of ships we are building today. I have a big concern that our major assets present major attractive targets for terrorists and an enemy of the future. And I do not know to what extent we can maintain the same capabilities with having smaller platforms, which provide smaller targets and more survivability.

So I think the number of ships—maybe we need a 3,000-ship Navy, rather than a 300-ship Navy, that costs no more than our present 300-ship Navy. And we have now commissioned a naval architecture study, which I want to ask a question on a little later with the next panel, that will hopefully get us there.

I want to thank you very much for your testimony. And I want to ask, as a favor, could you stand by until the second panel has testified, because I am sure there will be more questions that we would like to get answers from you on when that panel is also at the table?

If you could stand by and join them at the table, after they finish their testimony, for the questioning, we would really appreciate it. Can you do that?

Ms. BROWN. Absolutely, Mr. Chairman. And thank you.

Mr. BARTLETT. Thank you so much.

It is my understanding that we have the three witnesses from the Navy, all of whom will be available to answer questions, that

you have a combined statement? And Mr. Young, you will be delivering that statement. And the entire statement, without objection, will be entered into the record.

And so you are free now to make your oral statement. Thank you very much.

STATEMENT OF HON. JOHN J. YOUNG, JR., ASSISTANT SECRETARY OF THE NAVY (RESEARCH, DEVELOPMENT AND ACQUISITION); VICE ADM. JOHN B. NATHMAN, UNITED STATES NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (N-7) (WARFARE REQUIREMENTS AND PROGRAMS) DEPARTMENT OF THE NAVY; VICE ADM. JAMES C. DAWSON, JR., UNITED STATES NAVY, USN DEPUTY CHIEF OF NAVAL OPERATIONS (N-8) (RESOURCES, REQUIREMENTS AND ASSESSMENTS) DEPARTMENT OF THE NAVY AND MR. RONALD O'ROURKE, SPECIALIST IN NATIONAL DEFENSE, CONGRESSIONAL RESEARCH SERVICE

Secretary YOUNG. Mr. Chairman, Congressman Taylor, members of the committee, I am pleased to again appear before the committee, returning to discuss the Department of the Navy's ship construction programs and the fiscal year 2005 budget request.

I would like to again thank you for your personal and the committee's great support for all Navy and Marine Corps programs.

Vice Admiral Nathman, as you noted, and Vice Admiral Dawson are joining me on behalf of the Department of the Navy.

The Navy and Marine Corps team's outstanding performance in Enduring Freedom and Iraqi Freedom last year underscored the high return on your investment in our combat readiness, our people and our unique maritime warfighting capabilities. The naval mission covers the full spectrum, from protecting sea lanes, to forward presence, to forcible entry. We rely on all of our naval warfare systems operating together to provide sustained combat striking capability when required—all without a permission slip, as the Chief of Naval Operations (CNO) likes to say.

Central to enhancing our ability to perform these missions against any threat in the future and today are the new systems under development, such as DD(X), the Littoral Combat Ship, LPD-17, CVN-21 and LHA(R). As you know, the fiscal year 2005 request includes funds for nine ships, reflecting the continuous successful efforts by the Department of the Navy to increase the number of ships we are purchasing.

As we modernize the naval force, it is important to improve how we buy ships. Congress's steady calls for discipline in acquisition and support of new initiatives has enabled the department to take a different approach to contracts. I would like to emphasize some key examples.

Through Congress's support, the Department signed a new *Virginia* Class multiyear procurement contract. The contract includes a realistic target, incentives and share lines which reward under-target performance.

In an unusual step, the Department recently renegotiated the current *Eisenhower* carrier refueling contract to include similar incentives and revised share lines. The fiscal year 2005 budget re-

quest includes RDT&E funds for construction of the lead DD(X) and LCS.

This approach mirrors the approach used in every other weapons development program. Indeed, tactical aircraft programs are developed by using R&D funds to establish the production process and build pre-production aircraft. While we cannot afford to build and discard pre-production ships, the Department still needs a chance to establish a production process for the ship class.

We need the chance to work with industry to create a production process that can reduce the cost, applying advanced design and manufacturing techniques. Further, we need the ability to adjust the lead ship budget in order to avoid the detrimental effects of prior year completion bills.

Program managers are currently given one block of funds that must be carefully managed over a five-to ten-year period, in order to complete the complex process of designing and building a lead ship. Like you and me, managers will take a cautious approach, seeking to live within their budget and generally not making producibility investments for the class.

We need to allow budget adjustments to make sure the development of a successful process for the class is put in place. Steps such as these, endorsed by Congress, were essential to programs like C-17 and virtually every other program and reflect our normal way of doing business.

With improved buying practices, we also need to focus on developing an efficient design with the right level of capability. The acquisition team, the fleet and the requirements sponsors are collaborating to make affordable choices on new systems.

For example, DD(X) will provide surface fire support with precision for the forcible entry mission. Further, DD(X) provides greater survivability through signature reduction, reduce manning through automation and electric drive for efficiency and flexibility.

The DD(X) technology and hull will lead directly to CG(X), the next generation cruiser. We have made significant progress in developing the new technology engineering development models (EDM) needed for this future combatant and are committed to maintaining the schedule.

The littoral combat ship provides essential support for forcible entry, dealing with mines, submarines and small boat threats. The LCS seaframe will allow us to tailor the ship for the mission and easily upgrade the ship's capabilities in the future, as we have done with aircraft.

The Joint Requirements Oversight Council, or JROC, is expected to approve the requirements document for LCS in April. And the LCS source selection is expected in May.

Lessons from Iraq and Afghanistan suggest we should also maximize the air capability of LHA(R), while leveraging the design investment made in LHD-8. These lessons are consistent with the review, over the past year, of the joint forcible entry operations capabilities and would be part of our future seabasing strategy.

The resulting design is planned to provide a transformational capability that is interoperable with future amphibious and maritime prepositioning force ships, high-speed vessels and advanced rotorcraft like the MV-22 and the Joint Strike Fighter.

Mr. Chairman, out of respect for the committee, I will stop, leaving much more to say. I am grateful to the committee for the chance to offer a few examples of how the department is changing its approach to acquisition, requirements and the delivery of seabased capability with shipbuilding programs serving that function.

Congressional support of our vision is essential. And I thank you for your consideration.

[The joint prepared statement of Secretary Young, Admiral Nathman, and Admiral Dawson can be found in the Appendix on page 368.]

Mr. BARTLETT. Thank you very much.

Mr. O'Rourke, it is really nice to see you again. Please proceed with your opening comments.

Mr. O'ROURKE. Thank you, Mr. Chairman, distinguished members of the subcommittee. It is an honor to be appearing before you today.

You asked me to discuss potential oversight issues for the committee and for Congress as a whole on a number of matters relating to Navy force structure and ship programs. At the outset, it is important to note that there is currently no officially approved consensus plan for the future size and structure of the Navy.

As a consequence, Congress may find it difficult—if not impossible—to close the oversight loop by reconciling desired capabilities with planned force structure and planned force structure with supporting programs and budgets.

In a situation of planning uncertainty, Navy and DOD officials are free to speak broadly about individual programs, without having to show Congress that they have a credible plan for funding all of these programs in certain total quantities within a certain total amount of available funding.

Navy and DOD officials have argued that under capabilities-based planning, numbers of ships and aircraft per se are not as important as the total amount of capability represented in the fleet. At any given time, however, it should be possible, given current and projected ship and aircraft designs, to translate total desired capabilities into a force structure plan for a certain number of Navy ships and aircraft.

Those numbers may change over time as technologies change, but capabilities-based planning arguably does not serve as a reason to set aside permanently the question of the planned size and structure of the fleet.

Navy officials say the 2005 budget contains nine ships. It may be more accurate to say that the budget fully funds seven ships, along with 50 percent of a relatively inexpensive LCS and the first eight percent of the lead DD(X).

The CNO has testified that when he assumed office in mid-2000, the SCN account was \$4.7 billion and that this year, it is \$11.1 billion, suggesting the account has more than doubled during that time. But the SCN account in mid-2000 was not \$4.7 billion. It was about \$7 billion if you use the fiscal year 2000 figure or about \$12 billion if you use the fiscal year 2001 figure.

Rather than a pattern of steady growth since mid-2000, the SCN account since 2001 has shown no clear trend of increase or decrease, even while the defense budget as a whole has grown.

On the DD(X) program, the Navy has said the fifth and sixth ships will cost an average of \$1.2 billion to \$1.4 billion in fiscal year 2002 dollars. There are reasons to be concerned, however, that follow-on DD(X)s may cost closer to \$2 billion each in fiscal year 2002 dollars.

Navy officials have referred to producibility features in the DD(X) design, but have done little to show in detail why these features will permit the DD(X) to be built at the Navy's estimated cost, rather than a cost closer to \$2 billion.

When asked about potential DD(X) procurement costs, supporters have sometimes responded by focusing on the DD(X)'s expected low operation and support (O&S) costs. Reduced O&S costs, however, have always been a feature of the DD(X) program.

If follow-on DD(X)s are more expensive to build than the Navy estimates, then the DD(X) program, whether or not you include the O&S costs, will be more expensive and therefore potentially less cost-effective than now projected. Naval fire support is a central mission for the DD(X) and one that contributes to its cost. The fleet's requirement for additional fire support has been revalidated periodically in recent years.

Naval surface fire support, though, has not played an obviously major role in recent U.S. military operations. To the contrary, Afghanistan and Iraq have spotlighted concepts for conducting ground operations using smaller-size ground units, supported by aircraft loitering overhead with expensive all-weather precision guided missiles (PGMs).

The advent of inexpensive GPS-guided bombs, the concept of air-delivered loitering munitions and evolving notions of land warfare may lead to a renewed debate about the priority of naval surface fire support compared to other investments or about the amount of naval surface fire support capability that will be needed.

Navy officials have taken steps to mitigate technology risk in the DD(X) program. GAO has reported that the DD(X) is scheduled to enter system development with none of its 12 critical technologies fully mature.

Navy officials have said that the DD(X) is to form the basis of a spiral development effort, leading to the future CGX cruiser. Skeptics, however, could ask whether spiral development is being invoked here in part to use the more distant and possibly more strongly supported CGX cruiser as a means of leveraging support for the nearer-term DD(X).

If the DD(X) is not pursued, skeptics could ask, what would prevent the technologies now being developed for the DD(X) from instead being developed directly for an accelerated CGX? Navy officials have argued their plan to fund the lead DD(X) through the Navy's R&D account offers them advantages in terms of mitigating technical risk and controlling production costs.

They have also argued that it would make shipbuilding programs more like DOD acquisition programs for aircraft and other items. Whether this approach would make the DD(X) program more like aircraft acquisition programs is open to question.

More important though, this approach could weaken congressional oversight and cost discipline by obscuring the total cost of the lead DD(X), by permitting the Navy to blend construction funding with R&D funding and by permitting any cost overruns on the lead ship to be funded through the R&D account, rather than the SCN account, where the additional funding would show up in the highly visible "completion of prior year's shipbuilding" line.

With cost overruns on the lead potentially less visible, it may be more difficult for Congress to measure the risk of experiencing cost overruns on the follow-on ships.

There already may be limited awareness, as a result of this approach, that the total design and construction cost of the lead DD(X) is \$2.8 billion and that payments for the lead DD(X) are to stretch through the year 2011. Under the Navy's plan, the Navy could be asking for the final increment of funding for the lead DD(X) in the same year it would be asking to fully fund DD(X) numbers 11 and 12.

If follow-on DD(X)s turn out to be substantially more than the Navy projects, DD(X) procurement could be limited to one or one-and-a-half per year, which might not be sufficient to maintain the industrial base in its current form. Options for supporting the industrial base include procuring one or two additional DDGs in 2006, accelerating procurement of big-deck amphibious ships and accelerating and expanding procurement of deep water cutters for the Coast Guard.

The deep water option is a new and potentially very significant element in the industrial base situation.

On the LCS program, there appears to be no officially approved force structure plan at present that includes slots for any significant number of LCSs. The last officially approved Navy force structure plan, the 310-ship plan from the QDR, contained no slots for LCSs.

And while the Navy's proposal for a 375-ship fleet does include slots for LCSs, OSD has not approved that plan. LCS supporters could argue that a force structure plan with slots for LCSs will eventually be approved.

Critics could argue that, until such a plan is approved, the Navy has no force structure basis for proposing a program to build any significant number of LCSs. Prior to announcing the LCS program in November 2001, the Navy apparently did not conduct a formal analysis of multiple concepts—or AMC—to demonstrate that a ship like the LCS would be not just one way to perform the missions in question, but rather the best or most promising way.

The Navy acknowledged this somewhat reluctantly in testimony to this subcommittee a year ago.

Instead of rigorously comparing a ship like the LCS to potential alternative approaches for performing these missions, there appears to have been an a priori preference for the LCS. Navy officials have said they have conducted a lot of analyses since report of the LCS program.

This is true enough. But the analysis being referred to appears to be on issues other than the key oversight question of whether a ship like the LCS is better than potential alternative approaches for performing the missions in question.

The Navy can show that adding LCSs to the fleet would increase its ability to deal with littoral threats. But other potential additions to the fleet could do this as well.

What the Navy has not shown through formal rigorous analysis is that the increase provided by adding LCSs is greater than the increase that would be realized by investing a similar amount of funding in alternative approaches. That is the question that would have been addressed by a rigorous AMC.

The Center for Strategic and Budgetary Assessments has proposed building a few LCSs and evaluating them in exercises, while reserving judgment on whether to put the LCS program into serious production. This option could permit the Navy to verify the performance of the LCS and better understand how it might contribute to fleet operations. It would also provide breathing room for a rigorous AMC that is not tainted by a preexisting Navy commitment to build a lot of LCSs.

The Navy plans to fund LCS mission modules through the other procurement Navy appropriation account. One question is whether this approach would effectively obscure a significant portion of total LCS program costs and thereby complicate congressional oversight by placing these costs in a part of the Navy's budget where they might be less visible to Congress.

In fiscal year 2009, for example, more than \$1 billion—or about 44 percent of LCS program costs for that year—are in the OPN account. Navy officials say the LCS program's rapid acquisition schedule is consistent with reducing acquisition cycle time and is needed to meet an urgent operational need.

Skeptics could argue that recent major U.S. combat operations in Kosovo, Afghanistan and Iraq suggest that the Navy faces no immediate crisis in littoral warfare capabilities and that the Navy's argument about operational urgency is undercut by its own notional procurement profile for the LCS program, which would procure the ships over a 15-year period, with the final ships not being delivered until about 2021.

These skeptics could ask whether the LCS's rapid acquisition schedule is driven less by operational urgency than by other considerations, such as getting the LCS program started before there is a possible change in the administration or before there is a change in the CNO or before DD(X) supporters have a chance to kill the LCS or before people in Congress or elsewhere have a chance to learn more about the program.

The LCS's rapid acquisition schedule has provided Congress with only a limited amount of time to learn about the program. And for much of that time, the Navy has not been able to provide specific answers to questions about the program.

Because the LCS program is a spiral development effort, answers to some of these questions may only be determined over time.

An important oversight issue for the committee and for Congress is whether the combination of spiral development and a rapid acquisition schedule permits DOD to gain approvals for starting major acquisition programs without having to provide Congress with much specific information about those programs.

This issue is not necessarily limited to the LCS. If Congress approves the LCS program as proposed, DOD may view it as a prece-

dent for proposing other major acquisition programs in a similar manner.

On the *Virginia* Class program, submarine supporters are concerned that the Navy or DOD may be seeking to reduce the attack submarine force level goal, so as to limit *Virginia* Class procurement and transfer funding to surface programs, such as the DD(X) or LCS.

They are concerned about an internal Navy study which they understand concluded that the attack submarine force level goal can be reduced from 55 down to 37 if the day-to-day Intelligence, Surveillance, and Reconnaissance (ISR) missions of attack submarines are set aside for force planning purposes and the force level is established solely on the basis of the number of boats needed for warfighting.

Reducing the force level to something like 37 would permit *Virginia* Class procurement to remain at one per year or even less for a number of years.

The CNO has testified to this committee last month that he would not find a 30-boat submarine force acceptable. He did not, however, comment on whether he would find acceptable a force of more than 30 boats, but less than 55 or less than 40.

Although congressional action last year may effectively prohibit the Navy from requesting funding for a second *Virginia* Class boat in 2007 or 2008, it does not necessarily prevent a future Congress from funding a second boat in 2007 or 2008 if a future Congress wants to and sufficient funding is available for the purpose.

The absence of advance procurement funding to support a second boat in 2007 or 2008 would not be an obstacle. Congress can—and in the past has—fully funded the procurement of nuclear powered ships for which there was no prior year advance procurement funding.

The interval between the year of procurement and the year the ship enters service is simply two or three years longer than normal.

Finally, the current DOD study on forcible entry options and the new seabasing concept could reduce projected numbers of amphibious ships, while increasing projected numbers of Maritime Prepositioning Force (MPF)-type ships. Navy officials have said they view the MPF-type ships as complements to—not substitutes for—amphibious ships. They have not, however, indicated what mix of amphibious and MPF-type ships they see emerging.

Mr. Chairman, distinguished members of the subcommittee, that completes my statement. And I will be happy to respond to any questions.

[The prepared statement of Mr. O'Rourke can be found in the Appendix on page 356.]

Mr. BARTLETT. Thank you very much for a very complete statement.

Mr. Taylor.

Mr. TAYLOR. Secretary Young, while I have you here, going back to my comments to Ms. Brown—and again, I want to give you the opportunity, if I misspoke your words, I certainly want to invite you to correct me. But I am, given the already year-and-a-half gap between apparently the last DDG being built and the first DD(X), and because the industrial base is of great concern to me, as is the

shrinking fleet, number one: can we agree on a design for which the supplier can proceed?

And the second thing is: what alternatives could you propose in order to maintain the industrial base and to keep the workforce there in the gap between the last DDG and the first DD(X)?

Secretary YOUNG. Congressman, I think I will try to come at this in an orderly way. The backdrop for this discussion, which we worked through in detail last September and continue to work going forward, is we bought three DDGs a year for the—or three are proposed in 2005 and three were purchased in 2004. And four of those are at one shipyard, which is a significantly higher rate than they have seen in the years past.

So there is a backlog of work in that yard going forward. That is not as true in the other alternate destroyer yard. We have to pay attention to that issue.

The engineering development models (EDMs) for DD(X) are in process. We are doing what I think you would expect us to do, and that is making decisions about the design of the ship as prudently and as quickly as we can.

Several months ago, we made a decision to set the size of the ship. That freed up many decisions.

Now we have made decisions about how we will experiment with the electric drive motors, decisions about how we will load the gun. All those decisions have been made here in recent months. And they are flowing into the supplier base, as we speak.

So I cannot say we are behind schedule. Can you find a supplier who today, in March of 2004, wants to know what he is going to build in 2006? I am sure so. And we are conscious of having them involved in the discussion.

But we have to make the right design decisions so the ship is affordable, as many of you have talked about. And all that is on track.

It is up to us to accomplish the EDMs, demonstrate that the systems that build the DD(X) are mature and then come to you and say, "We are ready to build DD(X)."

Mr. TAYLOR. What recommendations would you have in the meantime, knowing that we have a year-and-a-half year gap, based on my time here, my hunch is—and I certainly hope that I am wrong—that gap grows? What recommendations can you make to this committee to try to fill that gap with things that the Navy needs?

Secretary YOUNG. I think how we got to this point is we live in a budget-constrained environment.

Mr. TAYLOR. Apparently only the United States Navy shipbuilding account. Everything else seems to have grown dramatically in the past three years.

Secretary YOUNG. And so within those constraints, we have bought DDGs to our notional requirement. Missions continue to adjust. And as you know, we have expanding mission requirements, if you will, to support national missile defense and others.

But we believe, with the DDG force we have—and that is continuously under review—we have an adequate force. So within that, and with the ships we have purchased, making that transition to DD(X) is what is critical to us.

We find that when you want to build a new ship, and especially a lead ship, there is a 12-to 24-month cycle of ordering materials so that you are postured to apply shipyard labor to building that ship. So the issue—that I think it was mentioned earlier, the secretary has discussed and we will continue to work internally—is a proposal that has been discussed in the Department would have been building the second DD(X) in 2006 with R&D dollars and giving both yards a chance to build that production process I have talked about focused on for those two ships.

In alternate, you could at least buy some of the materials and finalize the drawings in the production process in the second yard in 2006 and have a portion of the funds for the ship, but not the full funds for the ship and then fully fund the ship in 2006, using that advance purchase money and the design money in 2006 for that ship.

The other important step we are taking to focus on the health of the two yards is this ship is being built by a national team—DD(X) is. The two companies, both shipbuilders and combat system suppliers, are working together with multiple other partners. And on the lead ship, there is an intention to have certain blocks or modules of the lead DD(X) built at the second yard and shipped to the prime yard, so both yards begin to set up a production process.

And I highlight that to illustrate how important we view this transition and how important the industry views this transition, that they are working together to accomplish the transition from DDG to DD(X).

Mr. TAYLOR. Would forward funding of an LHA(R) help keep that manpower base in place as all these other factors start falling into place?

Secretary YOUNG. I think the follow yard for the destroyers has a fairly stable workload. Again, it is critical to hold the schedule on DD(X).

The lead yard for destroyers, which is also the yard, as you have noticed, to build amphibious ships, has a more significant problem. And that is what came out of our September study. And that is, they face a potential to drop several—3,000 to 4,000—in manpower and then have to build back up because of the timing of the amphibious ship.

And frankly, buying even a couple more DDGs, even if we could assign them to that yard, sole source, would barely fix that problem. So we have looked hard at whether there are budget opportunities and procurement mechanisms to pull that ship forward.

I think that ship may be the more important piece of the health of that yard and whether they have to go through a drop and a recovery or can work stably going forward.

Mr. TAYLOR. If this committee sought to do that, what would be your opinion of such a move?

Secretary YOUNG. Well, the President's budget has that ship in 2008. I support the President's budget. But I recognize that in executing that budget, we have a significant—we are putting before our industry partner a significant challenge.

And so if the committee chooses to deliberate on that, I think the Marine Corps and the Navy agree there is a requirement for that ship. And we, on our own, will look at opportunities within that

constrained budget to pull that ship forward because of the industrial issue. And we will have to balance that against the requirements issue and the many other needs in the Department of the Navy.

Mr. TAYLOR. Okay. So is that a flat "no?" Or is that a maybe? Or is that you would welcome that option?

Secretary YOUNG. We would execute the will of the committee.

Mr. TAYLOR. Okay. Thank you, Mr. Chairman.

Mr. BARTLETT. Thank you very much.

Mr. O'Rourke, do you have an observation, a comment, on the issues that have just been discussed between Mr. Taylor and Mr. Young?

Mr. O'ROURKE. Well, I think it is important, in looking at the industrial base, to try to keep in mind that there are two categories of concern: one is for the shipyards; and one is for the suppliers. A solution that might work for the shipyard might not work for the suppliers and vice versa.

In terms of moving money ahead for an LHA(R) ship, I think that would definitely help to support the business base and the employment levels at the yard. Whether that would support the same suppliers that you might be concerned about in connection with the DD(X), I think would depend on the individual supplier.

So I think the solution for the suppliers may or may not reside partly within moving the LHA forward or it may or may not reside within adding one or two additional DDGs into the 2006 column or accelerating procurement of the cutters for the Coast Guard deep water program.

Mr. TAYLOR. Would the chairman yield?

Mr. O'ROURKE. The solution for the suppliers, I think, would be something you would look at more on a focused, firm by firm basis because their situations will differ from one to the next.

Mr. BARTLETT. Mr. Taylor, you have a comment?

Mr. TAYLOR. Yes, sir, if the chairman would yield. I would be curious to hear Mr. O'Rourke's thoughts, either now or sometime in the near future, as to how he would address that so-called manpower bathtub that we are looking at.

Mr. O'ROURKE. I can talk about it now, if you would like. If, after examining the situation, for example, at Ingalls, you see a manpower bathtub, as I indicated in my testimony, there are three options which can be pursued in combination for filling that bathtub in.

You could put 1 or 2 additional DD(X)s in the 2006 column. The Navy does not have an official requirement for those ships. But if they are built, the Navy would make very good use of them. And they would provide additional revenues and employment to the yard.

Your second option is to accelerate procurement of LHA(R)-type ships into the near term, either through partial funding or just by moving up the whole schedule.

And the third, and the one which I think is important to begin thinking about in looking at the industrial base situation for the Navy, is the option of accelerating and possibly expanding Coast Guard cutter procurement. The Rand Corporation recently put out a study which says that instead of building 33 larger cutters under

the deep water program, the Coast Guard might contemplate building as many as 90. Ninety is the number that Rand says, in their report, would be needed to fully meet the existing and emerging mission demands of the Coast Guard.

Those Coast Guard cutters are a lot smaller than the DD(X). But building four or five of them would constitute a collection of ships that would have a displacement roughly equivalent to that of a DD(X).

And so it may be that part of your solution resides in accelerating and expanding the number of cutters to be procured under the deep water program.

Mr. TAYLOR. Thank you for yielding, Mr. Chairman. Thank you.

Mr. BARTLETT. Let me ask now a question I was going to reserve until later, but it seems appropriate now. Clearly, maintaining our industrial base is very important. And the question is: how does DOD and the Coast Guard coordinate their ship construction to do this?

Your observation, Mr. O'Rourke, about the deep water cutters fits into this. Obviously, they are needed. And obviously, if there was to be a surge in that need, that could then occupy our ship-building base, so that we could have more time to make maybe better rational decisions on the DD(X) and so forth.

Would you comment?

Mr. O'ROURKE. Yeah, there are a couple of things I could say in connection with that. The first is that there is a Nav-Guard, a Navy-Coast Guard board that meets regularly to coordinate the activities of the two services. And that could include things like coordinating procurement activities.

Mr. BARTLETT. Does it?

Mr. O'ROURKE. It meets regularly. I do not know exactly—

Mr. BARTLETT. Do they talk about procurement and the industrial base and how they might cooperate to—

Mr. O'ROURKE. I think that is a good question to ask the Navy and the Coast Guard, whether they have addressed those topics at the Nav-Guard meetings. Second, there is a national fleet concept, which has been signed out twice.

This is a memorandum of agreement between the Navy and the Coast Guard, in which the two services take on a commitment to more closely coordinate their various activities, including acquisition activities. And so, the national fleet concept, which is quite new compared to the Nav-Guard board that goes back many years, can be considered as a measure for reinforcing the idea that the two services can and should cooperate so as to maximize at the national level the investment that the country makes in maritime defense assets.

And so under the national fleet concept, which the leaders of the two services have signed, there is actually now an explicit commitment to look directly at, among other things, coordinating procurement.

But doing the Coast Guard cutter option will require coordination between DOD and a different cabinet level department, DHS (Department of Homeland Security). It will also require the committees on the Hill that look at the Navy to sort of talk to the com-

mittees on the Hill that look at the Coast Guard under the DHS appropriations.

So the coordination would need to take place on both sides of the river.

Mr. BARTLETT. We intend to talk to our counterparts here in Congress.

And Mr. Young, my question to you is: are you talking to homeland security about the deep water cutters and the potential to coordinate our procurements and their procurements so that we do what we clearly must do; and that is, maintain an adequate industrial base?

Secretary YOUNG. Mr. Chairman, I would be happy on this one, you could always do more. But I have probably met with Admiral Stillman half a dozen times, who is the lead for the Coast Guard deep water program. At the PEO level, my program executive officer for ships has a memorandum of agreement with Admiral Stillman and his deep water team on things, technologies, all the way up to the hulls we could share between LCS and the deep water program.

So I would tell you, yes, sir, we are working that. My workload discussions, going back to September and looking at the DDG to DD(X) transition, considered the national security cutter work that is in the Ingalls yard. So we are conscious of all of these facts at all times.

Mr. BARTLETT. When you make decisions about your recommendations for the procurement of your ships and the need to maintain the industrial base, are you factoring into that the needs of the Coast Guard and their deep water cutters?

Secretary YOUNG. To a degree, yes, in that we are conscious of the workload charts, based on the Coast Guard's budget projections and what the national security cutter, for example, or others might consume of the industrial resources and then whether or not the plans we are making would fit within the remaining industrial resources.

And as I said, that analysis says that we still have issues, specifically at Ingalls, in the 2007 to 2008 timeframe, where their production workload will drop and then rise back up. And those are the issues we are looking at in the budget. And that is why at least one option is the LHA(R) discussion.

Mr. BARTLETT. Is it feasible that if we were to optimally coordinate with Homeland Security, that we might not have that year-and-a-half drop?

Secretary YOUNG. Sir, in general, the Coast Guard has purchased ships at smaller yards. I guess some, I hesitate to use it, but some would call them second-tier yards, as opposed to first-tier, major surface combatant construction yards.

So national security cutter is one of the first ships where they are using a so-called "tier one" shipyard. And the Navy in alternate, at least the companies, have proposed to us—we did not dictate it, but the companies have proposed to us—building LCS in some of the smaller yards that the Coast Guard uses.

In both cases, again I would suggest, subject to each department's decisions about their out-year budgets, we are conscious of

the workloads between the two yards and that the industry can provide the products that we are budgeting.

Mr. BARTLETT. If we are conscious of it, are we actively cooperating and coordinating so that we are going to avoid peaks and valleys in our yards? Or could we be doing better?

Secretary YOUNG. I would say we are making an effort. It could be done better. I mean, Congress plays a role in this, if I could say so, because I think—I apologize. I do not know the Coast Guard budget perfectly well, but I believe a national security cutter was added last year.

So there are adjustments that are made by Congress also in this discussion that would have to factor into the planning and the degree of coordination you are talking about.

Mr. BARTLETT. Thank you very much.

Mrs. Davis.

Mrs. JO ANN DAVIS OF VIRGINIA. Thank you, Mr. Chairman. And with all due respect, Secretary Young, when you made the comment that you operate under budget restraints, you may very well do that. But if you do not ask for more, we may not try and get you more.

Admiral Nathman and anybody else who—Mr. O'Rourke, feel free to chime in to an answer on this question. Earlier this year, Secretary England stated that when it comes to defining the right fleet size and the makeup, that numbers are notional. And he went on to say that what really counts is capability.

And what measurement are we here on this subcommittee supposed to use to determine whether the Navy has the assets it needs to perform its duties, as we perform our duty in Congress, under Article 1, Section 8 of the Constitution?

It seems clear that, supposing we do not have an aircraft carrier available to address a problem in the Pacific, it does not matter how capable the aircraft we have are if we do not have a carrier on which to land them. And if all of our submarines are deployed in trouble spots and a new one pops up, as capable as the technology on those subs may be, it does not allow them to be in two places at one time.

And what is the measuring stick that we in Congress are supposed to use? Whether the number is 360, whether it is 400, whether it is 375, the fact of the matter is that we do not have a naval force structure policy. And I think Mr. O'Rourke alluded to that.

And I believe very strongly the Constitution, under Article 1, Section 8, says that it is our job here in Congress to provide and maintain a Navy. So I am just curious as to what is our measuring stick?

Admiral NATHMAN. Yes, ma'am. If I could take a chance for some stage setting with Mr. O'Rourke's comments and even Ms. Brown's, I think we need to talk about—I believe we have a very logical way of building our shipbuilding plan. I also believe we are trying in our Future Years Defense Plan to predict the future.

There was some comment made about the fight in Kosovo and we did not use ships in Kosovo a certain way, so why should we buy things like littoral combat ships? Well, the future is about two things. The future is about access and speed.

And it is very clear the Department of Defense wants speed in influencing the battlespace. And I want to talk to that in a second. But a real part of it is about access.

And so the Navy's challenge right now, with the fact that we believe strongly that our mission and our competencies will be more and more in demand from the joint force because of the access trends. The access trends are pretty clear. Look at just a year ago, the access trend we had in Turkey.

So political access is going to be down in the next couple of decades; certainly this next decade. And access to a battlespace where you have fixed sites is at high risk because of the fact that they are fixed and people can locate them. And typically, they may be in unprepared battlespaces, like we are seeing in Iraq and in other places, where it does not take much of a force to really drive a very high logistics and force protection need on that fixed site.

So we believe the competencies of the United States Navy, that we bring the joint force, are going to be very much in demand. And we are trying to look at that because we believe, in our future fights, access for us is going to be about: how do we deliver the maritime dominance or the maritime superiority to allow that joint force to close and be sustained, in many cases, from the sea?

And that is why you are seeing a lot of this discussion of rhetoric and analysis by the Navy around the seabasing concept. That is why you also see us grasping very rapidly around a compelling gap; and that is, how do we develop and sustain this maritime dominance in the littorals?

And that is why we have heard this word about a certain bias towards the littoral combat ship. And let me spend a few seconds to talk about that.

If you believe that it is going to be an access issue and we see the future fights in the Pacific Rim, in Northeast Asia and Southwest Asia, there is a maritime dominance issue there that you need to really pay close attention to in how you support and sustain that maritime dominance.

At the same time, we are seeing what you would think of as our classic ships—our DDGs and our cruisers—being pulled into different missions. Right now, our DDGs are being pulled into missile defense. And that demand will go up before—it will certainly go up, I believe, in the future.

We are seeing in the global war on terrorism a very big demand on our surface force to get up next to relatively small ships, to interdict them, to find out if they are pushing drugs to finance the global war on terrorism, to see if they are moving clandestine cargos and to look at particular individuals that have access through the sea.

So there is a big demand on our force. And if you think about it, these are very sophisticated, expensive ships, that are often called to get relatively close to the ships. So we believe—and the point was made about having a distributed force over Iraq. But that distributed force over Iraq was an Air Force that had relatively cheap weapons on them.

That is what LCS is about. LCS is about speed in the littoral, with a distributed capability, that is a relatively low cost, to do exactly what Mr. O'Rourke was insisting that the Air Forces did—

Navy and Air Force and Army Air Forces and Marine Air Forces—did in Iraq.

We want a distributed force that is very high speed, that gets the persistence there of both sensors and capabilities, by using the modules that we can put into that distributed battlespace, so we know what it is.

Mrs. JO ANN DAVIS OF VIRGINIA. Why do you think the LCSs were not included in the 310 number in the QDR?

Admiral NATHMAN. Ma'am, I can explain that. This is the rational basis for our shipbuilding. We delivered a 30-year shipbuilding plan. And this committee has a copy of it.

And inside that plan, the Department basically validates a need for around 310 to 316 ships. In our 30-year shipbuilding plan, what we add in that is our concept of this distributed capability in the littorals—the littoral combat ship was about 56 LCSs—and maritime prepositioning future ship, which we believe is going to be part of our seabasing construct.

So when you add those numbers in there, you reach around 375 ships. And that is the rational basis for our numbers.

Mrs. JO ANN DAVIS OF VIRGINIA. So you are still back to 375?

Admiral NATHMAN. Yes, ma'am.

Mrs. JO ANN DAVIS OF VIRGINIA. No matter how you slice it?

Admiral NATHMAN. Yes, ma'am.

Mr. O'ROURKE. If I could respond to the first part of your question about numbers being notional versus capability. Balancing total numbers and unit capability is a longstanding naval planning issue. It is not anything new. It goes back decades.

There is nothing wrong with the Navy saying or DOD saying, "We are doing capabilities-based planning, so what we want is a force that has a certain total collection or package of capabilities." But as I mentioned in my testimony, given the designs you have for your ships and your aircraft and the technologies that go on them, it should be possible, once you understand what that total collection of capabilities is that you want to have, to translate that into a certain number of platforms and get a force structure plan.

It is OK for periods of uncertainty to emerge from time to time in naval force structure planning or force structure planning for the other services. It has happened in the past. The last time it happened was the first two years during the previous Bush Administration, for example. So these things happen.

But there are potential consequences if these periods of planning uncertainty persist for a long period of time, for exactly the reason that you mention: because it creates a situation where nobody needs to be held accountable for anything that they say about numbers and costs because there are no numbers and there are no total equations that can be examined to see if they make sense. You cannot close the oversight loop. You cannot reconcile that collection of capabilities with numbers and the numbers with the budgets if you do not have the middle element of that equation.

And so it is OK to talk about capabilities-based planning. It is understandable if a period of planning uncertainty emerges from time to time. But if that period of uncertainty persists for a very long time, it could begin to make it very difficult for Congress to carry out its oversight functions.

Mrs. JO ANN DAVIS OF VIRGINIA. Thank you.

Thank you, Mr. Chairman.

Mr. BARTLETT. Thank you very much.

Mr. Kline.

Mr. KLINE. Thank you, Mr. Chairman.

Gentleman and lady, thank you again for being here. I am going to continue to beat this horse for a minute because I do not think we have come to a conclusion. It appears to me, listening to the testimony and discussion, that we have a budget that the Navy has presented which leaves us with a production gap in our shipyards.

And the question here amongst the members is—and you, Mr. Secretary—is: what are we going to do about it? And there are suggestions to move perhaps the deep water cutter, perhaps an amphib, perhaps continuing production of DDG-51. And I am not sure we got an answer. And maybe it is Ms. Brown who gives it to us.

Does that fix the employment gap, the production gap? Is any one of those better in terms of the shipyards themselves or the suppliers, from anybody willing to step in?

I think, Ms. Brown, you were included in this panel, even though you have stepped back.

Ms. BROWN. I can state that when you have your existing supplier base depends on DDG-51s. So when the DDG-51 ends, those suppliers are going to be impacted adversely. That is the first point.

Mr. KLINE. No matter what we do for our follow-on ship?

Ms. BROWN. If there is a gap for them, they are going to be the most impacted. So they are going to be impacted. In that year-and-a-half, which is really more of a two-to three-year period for many of them because when ship fabrication begins is not when all of the supplies are ordered or all of the components.

If you are looking for a means to mitigate the risk, there are two shipyards involved here. And they are both hurt terribly in this production gap.

So it is to, at the same time, hold the DD(X) schedule, but also to add more DDGs helps one yard, would help both yards. The other alternative is accelerating LHDs or accelerating other programs.

It does not mean that those other programs, though, will help both yards. There is only one program that could be continued that would help both yards and, at the same time, helping the supplier base that you need when you start building DD(X)s and then CGXs.

Mr. KLINE. Okay. Thank you. I think we are going to need, in some form gentlemen, some help. Because my sense here is in this subcommittee and perhaps in full committee, we are not going to accept—just my own opinion and guess—we are not going to accept a year-and-a-half gap. It is just unacceptable, on a number of fronts.

And the budget does not allow for that. So in some way, we are going to need to get some guidance from you. Or again my guess is—and I am just a new guy here—we may provide a fix that you do not want.

So in some form, we are going to need a little bit of guidance from you, even if it does not exactly match the President's budget. And my guess is also you are not prepared to address that right here, right now.

But I am hoping that we are going to get some information from you. Or perhaps you are?

Secretary YOUNG. Can I just add one comment?

Mr. KLINE. Please.

Secretary YOUNG. There is some correlation between the prime for the ship and the supplier base. I mean, they have to be correlated in some way. It is not like suppliers bill it out and primes do not.

So we are addressing and could address in greater detail the supplier—the sub-tier suppliers to the primes. But the budget proposed, as long as we hold schedule on DD(X), provides a reasonable transition for the destroyer industrial base, a smooth transition. It is not totally risk free. But it provides a stable transition.

Within that, when we have this bigger discussion, we have to bring other things to the table we have not talked about. There is a cruiser modernization program that provides substantial work and workload, particularly for suppliers and, in some ways, maybe less or limited work for prime vendors, but substantial work for suppliers.

An SSGN program that is going on robustly and aggressively and on schedule has consumed significant supply, steel and other resources and providing work for both industry and public yards because it is being worked in a public-private partnership. And then the national security cutter and what has been done in deep water.

So at the sub-tier vendor level, below the primes, we have to look at the full spectrum of programs and modernization and overhaul, as well as even maintenance work. And we do not have substantial examples that there is a serious problem there.

Mr. KLINE. Okay. So that is your testimony? Your position is there is not an impact on either the yards or the suppliers? Not an appreciable impact?

Secretary YOUNG. I think we have a stable, but thin base of both primes and suppliers.

Mr. KLINE. Any comments from either Mr. O'Rourke or Ms. Brown?

Mr. O'ROURKE. I think in terms of the suppliers, what you need to do is examine those suppliers on a case-to-case basis because their situations may differ from one company to the next. One firm can navigate a year-and-a-half gap, while another one may not be able to.

And a fix for one supplier firm may not be the right fix for the next. You simply need to do a survey of those firms and try and be as meticulous as you can and make sure that your solutions are focused, so that you do not wind up spending money addressing things that are not problems while you are trying to find money for things that really are problems.

Mr. KLINE. Okay.

Ms. Brown.

Ms. BROWN. Could I?

Mr. KLINE. Please.

Ms. BROWN. I have the greatest amount of respect for John Young, sitting to my left here. Good friend. However, I have to say that the Navy has not ever studied the supplier base—the first tier or the second tier suppliers—of the shipbuilding industry.

The organization that probably knows more about the supplier base is the American Shipbuilding Association, above any and all organizations in this town. And I am in the process of doing that survey to find out exactly how each and every one of them will be impacted.

The shipyards oftentimes, they know who their suppliers are—absolutely. But they do not necessarily understand what the impact will be on them from a gap in production.

I know of no study that has been done by the Navy of the supplier base, either first tier or second. But we are working on it.

I would also like to make one other comment, that on trying to fill the gap, it is about risk mitigation. How do we mitigate the risk in the shipbuilding plan and that gap for the surface combatant community? And there are multiple answers.

But the one way to mitigate the risk is by accelerating ships in the plan and keeping DDGs going during that transition. I can also say that with—the admiral has talked about missile defense and the need for 15 to 18 destroyers and cruisers for missile defense. That means that DDGs and CG-47s would be pulled out of the inventory, where already are below the 116 required in the QDR, to serve a ballistic missile defense role.

It seems as though there is a requirement for more surface combatants.

Mr. KLINE. Okay. Thank you, Mr. Chairman. I see the red light. My apologies.

Mr. BARTLETT. Okay. Thank you very much.

Mr. Schrock.

Mr. SCHROCK. Thank you, Mr. Chairman. I had a couple of questions. But I am so confused now, I probably have a lot more.

I agree that studies ought to be done. But I am wondering if we have really studied the global maritime threats to the United States, which would dictate a lot of what we build. And we talk about filling the bathtub, as Mr. O'Rourke said. And the answer was to maybe just build more DDGs.

Well at some point, we just cannot keep building more DDGs. So I am puzzled. I am puzzled.

I want to make a comment to the secretary and to Admiral Dawson and then ask a question. The Navy has requested a multiyear procurement arrangement for the *Virginia* Class submarine in which we procure two ships a year for the next years. Congress authorized—we authorized—the multiyear appropriations, but only at a build rate of one a year.

House appropriations have also cut advance procurement funds for the *Virginia* Class and other shipbuilding programs. Could you speak to how these restrictions and changes in the multiyear procurement authority will lead to overall increased costs to the programs?

Secretary YOUNG. I guess I could start with that. And the straightforward answer would be we negotiated a multiyear contract and Congress thankfully gave us the authority to sign that

contract. It offered the potential to save \$155 million, on average, per submarine if we bought 7 subs, which is over \$1 billion; \$126 million per sub for 6; and \$80 million per sub for 5.

Congress directed us that five was the appropriate amount and gave us advance procurement for that. So we have the opportunity to save \$400 million on those submarines.

We will forego the chance for greater savings per submarine. We will also forego an aspect of what we are discussing here. And there has been a reasonable study of the industrial base supporting *Virginia*.

We know that in some of the nuclear elements of this submarine, we are down to single tier suppliers. And they are being consciously monitored and worked with as we go forward.

And this multiyear is very critical to them. It allows people to at least plan—albeit one a year-five years of stable production so that hopefully they stay in this business and support *Virginia* going forward in the class.

Mr. SCHROCK. Sounds to me like we need to get the appropriators to change the way they do business. I guess it is a pretty cruel thing, but as far as I am concerned, they seem to be the root of all evil around here. They really do.

And I say that seriously. And I know you cannot comment on that, but I certainly can.

And I think we need to get to those people. And we need to make sure the staffers understand that and that the staffers make members understand that so the inmates are not running the asylum. And that is why we are having a lot of these problems.

We just better say it and say it right upfront. My staff is dying back there; I can assure you. But I mean, that is where we have to get some of these things changed.

Admiral Dawson, do you want to—

Admiral DAWSON. I have nothing to add to that. [Laughter.]

Mr. SCHROCK. Oh, you are smarter than I am, that is for sure.

Secretary YOUNG. Can I offer one comment?

Mr. SCHROCK. Yes, please.

Secretary YOUNG. Probably at my peril. But there is a legitimate debate there. And I think it plays out in all the discussions we are having here today; and that is, the first *Virginia* hopefully will deliver this June. And we are working that very hard and with a great deal of success.

The marker that some in Congress laid out is were they prepared to commit to two a year on a multiyear, essentially irrevocably committing Congress to fund those submarines, without having seen the first submarine go through testing. That is a struggle for us. I do not say that to illustrate the debates that you all should work out here in Congress, but to illustrate the aspects of shipbuilding that are a challenge for us.

Even as we make this transition from DDGs to DD(X), there will be people that will want to say, "Why should I fund this DD(X) because you have not proven this and this and this and the other thing?"

At some point, if you believe in a stable industrial base and we make a good argument for the capability, which definitely can be made, we have to then agree to fund that program and go forward,

albeit it thin or less robust. I think that it is difficult to get every member of Congress to agree to a significantly more robust program until you can prove results along the way.

Mr. SCHROCK. I know my time is about up, but I wanted to just ask Secretary Young, there has been a fair amount of discussion over the Navy's decision to fund the lead DD(X) and the LCS ships from the RDT&E funds. And I agree that the practice of forcing the Navy to frontload all the costs of ship procurement in your budget can be crippling and that the Navy is the only service, quite frankly, that has been challenged to do so.

Could you elaborate on the advantages of using RDT&E funding to procure the lead ship, especially when it comes to cooperation with the industry partners?

Secretary YOUNG. I believe this is a critical step for the industrial base. We have—to illustrate, many of you spent some time on F-22. We spent about \$26 billion to develop that airplane.

We are proposing to spend \$40 billion to develop the Joint Strike Fighter (JSF). In the DD(X) program, we have about \$5.9 billion for design and—for development and detailed design. CVN-21 is similar, about \$5 billion for development and detailed design.

There is a need to spend additional funds in RDT&E to develop systems and allow our shipbuilders, just as our aircraft providers, to develop modernized manufacturing processes, advanced assembly procedures and mechanisms that reduce labor or touch labor and deliver a product at lower cost. We have not done, I think, well in shipbuilding on that account.

This step does not necessarily raise the cost because we are working within a budget. But it does allow a program manager who is given money on Year 1 that has to last for 5 to 7 years to make a decision to invest in a machine tool or invest in a manufacturing or assembly process that will pay off over the class of DD(X) as currently projected at 24 ships.

Rather than decide, "I am not prepared to invest in that machine tool or that process because I am afraid that I will run out of money and have to go to the CNO for prior year completion funds to complete that ship," which the CNO and the Secretary are very troubled about that. That is a lost opportunity cost in the future.

It is also detrimental because you do not recognize those problems until you get there. And then you go through: do we come and ask Congress on a reprogramming? Or do we come in a budget?

You are six months to a year from getting funds to fix your problems; whereas, if we can go through and have RDT&E and annually take a look at whether the program is budgeted right. And I would strongly advocate, we are prepared to give Congress total visibility in this program.

I do not agree with the critics that suggest this is an effort to hide the costs. There is nothing precluding Congress from asking us. And we are prepared to display, along the way, every dollar cost to design that ship and to build that ship.

But we do want to be able to come to you next year and say we can invest in a machine tool and an assembly process if we have \$10 million more. And we are going to ask you this year for that \$10 million.

And we are going to apply it to the class of the ship, using RDT&E funds, instead of having to wait and use some SCN process—ship construction Navy funds and procurement funds in a re-programming to get there.

Mr. SCHROCK. Mr. Chairman, I agree with that because every time they come back, we keep asking these questions, because the system they are forced to live under creates doubts in the minds of the members and that causes questions. We have to get that resolved.

Thank you, Mr. Chairman.

Mr. BARTLETT. Thank you.

Mr. O'Rourke, is there a potential downside to this approach?

Mr. O'ROURKE. The downside are the things that I mentioned in my opening statement, that funding these ships through the R&D account would allow the Navy to pay for this ship through a stream of payments, which is a process that does have the potential for reducing the total visibility of the cost of that ship to Congress.

It allows any cost overruns that might occur to be funded through the R&D account, where they, if they are financed, would not be as visible as they would be in the SCN account. And it would allow the Navy to blend both construction and R&D funding for this ship in its budget documents.

I welcome the statement of Secretary Young, the commitment he just made, to make the cost of this program more visible, even though the Navy's intention is to fund it through the R&D account. This is the Navy's budget highlights book. It has 100 pages of detailed information on the Navy's budget in it.

But if you were to look in this book for the total cost of the first DD(X), or even for the portion of that cost that appears in this year's budget, you will not find it. It is not there. And it is a consequence of the fact that the Navy is trying to fund this through the R&D account, rather than through the SCN account.

The same thing holds true for the LCS. If you look for the amount of funding for the LCS that is in this year's budget for that lead ship, you will not find it here either.

So I welcome what Secretary Young said, that if these ships are to be funded through R&D, the Navy will do what is necessary to make these costs fully visible to Congress so that Congress can understand and track them and carry out their oversight responsibilities in connection with them.

But the budget documents, in some cases such as this one, which a lot of people do rely on as a handy source of information, in some cases do not have those numbers in them and you have to look harder. That is what I mean by "less visible."

Secretary YOUNG. Mr. Chairman.

Mr. BARTLETT. Yes?

Secretary YOUNG. If I could? I would appreciate the chance to comment. I believe, as a former staffer here, our contract with Congress is documents called R-1s and P-1s, which break down in great detail exactly how we spend virtually every tax dollar you give us.

An R-1 for this account is well over 1,000 pages. And we are happy to drop one on Mr. O'Rourke's desk.

For the record, LCS in the 2007 budget is \$107.7 million to build the lead ship, against a projected cost—and we have not made a contract award—of \$220 million. For the lead DD(X), it is \$221 million of the budget request in 2005. We have a projected cost for the lead DD(X) of about \$1.8 billion, along with \$900 million for detailed production design; \$2.7 billion for that lead ship.

And we are prepared to provide any document and honor the contract we make with Congress through R-1s and P-1s.

Mr. O'ROURKE. The R-1s and the P-1s do not show funding beyond a certain number of years. And a portion of the total cost of the lead DD(X) falls in years 2010 and 2011, which are beyond the FYDP. Somebody looking at documents that show funding out through the end of the FYDP will not have an understanding of the total cost of the DD(X) because the funding in those 2 years is not shown.

Secretary YOUNG. R-1 and P-1 documents have "cost to complete" columns in every category of my experience. And if not, we are happy, at the request of Congress, to answer those questions.

Mr. BARTLETT. Mr. O'Rourke, of course, is one out of roughly 280 million people. I think his concern is the rest of those people. I am sure that with his knowledge and insights, that he can find out what it costs. His concern, I think, is that the general public and we in Congress need to know what it is costing.

Thank you for your commitment to make these costs more visible.

Mr. Langevin.

Mr. LANGEVIN. Thank you, Mr. Chairman.

Thank you to the panel.

Obviously, we are touching on a very important topic here. And I had—something that Mr. O'Rourke mentioned actually caught my attention.

Secretary Young, your fiscal year 2004 budget request proposed a long-term program for the *Virginia* Class procurement that would increase the procurement with the submarines to 2 ships per year, starting in fiscal year 2007, which was intended to support the objective of 55 attack submarines, consistent with the 2001 Quadrennial Defense Review. Yet this year's budget request again delays the increased procurement rate until fiscal year 2009.

As you know, it takes six to eight years to add a submarine to the fleet, once approved for advance procurement. And obviously, we are at a critical point. New submarines are needed to replace the older ones.

What is your position on increasing the procurement rate of *Virginia* Class submarines to two per year? And will your fiscal year 2009 target slip again this year, taking us to fiscal year 2010?

And with respect to the comment that caught my attention, Mr. O'Rourke made the statement that Secretary Clark said that a submarine force slipping to 30 would be unacceptable, but did not specify if a submarine force below 55 would be acceptable, even something as low as to 35. Can you clarify what exactly is Admiral Clark's position on the size of the submarine fleet?

Secretary YOUNG. I will offer a couple of comments. I think Admiral Nathman in particular is better suited to answer the requirements question.

The Department's stated goal is to attempt to get to two a year *Virginia* Class. And that is clearly what supports an inventory of roughly 55 submarines.

Congress did, however, last year, do two things: one, added two EROs (engineering repair overhauls), which helped stabilize the number of submarines in the force; and alternately, directed that we only contract for one a year *Virginia* Class. So that prescribes our courses of action from that.

The CNO has undertaken a study—and maybe at that point I will stop—but I think that study is an important effort to look at, within the changing requirements base—and I know that is a challenge for the members—and the changing way of operations, things we are doing, not necessarily in submarines, but in surface ships, such as *Sea Swap*, change the mission requirements. What is exactly the right number in the submarine force? And that effort will look at it across the fleet, I am sure.

Admiral Nathman is doing much of that study work. And I will defer to him for further comment about what the studies might say about our requirements.

Admiral NATHMAN. Yes, sir. I think everyone should appreciate—and I come back to what the chairman has asked before about unmanned, underwater vehicles. But there are a lot of dynamics in how you build force structure requirements for the submarine force.

Right now currently it is built on warfighting and this compelling need by the intelligence community for a distributed Intelligence Surveillance and Reconnaissance (ISR) surveillance capability that our submarines bring because of their ability to get into those access areas.

The other debates that I see inside of this is there is a tremendous requirement for intelligence preparation of the battlespace, again because of the submarine's covertness to get into those parts of the battlespace, as they build that battlespace preparation before a conflict. And at the same time, there is this dynamic of adding SSGNs to our budget over the last several years, buying four of those. And then how do you leverage the volume of SSGN and trying to understand what your total submarine force structure ought to be?

And I will make this point about ISR right now. Submarines do that very well. And they do it for national needs primarily.

But it seems to make sense to me that if you are going to be asked to take a very high value, very expensive, very complex device and—like a submarine—and keep it in a constrained battlespace so that it can detect certain communications and signals intelligence in a very confined area, that we might be better off in the near term looking at investments in leveraging the volume of SSGN to putting unmanned, underwater vehicles in those very same places.

A submarine would probably be the delivery vehicle. But it could be an SSGN or it could be an SSBN.

So why could you not leverage the force structure that you need by taking more of this requirement and going offboard into unmanned, underwater vehicles and that potentially leveraging the investment in SSGNs the same way.

So this is part of the debate we are having. We are having that debate now in an underwater sea superiority study with the joint staff and our own significant study, as you would expect, another study that says let's look at our total force structure requirements around the capabilities that we will need in these very specific fights that we have been looking at, that we see in the future.

So this is the kind of rigor that we are trying to get to, sir, to understand what that force structure requirement should be so we do not under-or overinvest in the total size of our submarine force.

Admiral DAWSON. I might just add, sir, that those are ongoing right now. And we expect them to inform us—although not for the budget that you have before you this year, but what we submit in 2006.

Mr. LANGEVIN. If I am hearing this correctly, it again is possible that you may back off the two per year submarines and you are willing to, depending on what this review produces, that we could significantly drop below the 55 submarines force?

Admiral DAWSON. Well, what I am saying, sir, is you have a congressionally mandated action on certainly the force structure we are buying now, through 2009. And what we are looking at here is these two specific studies, one by the joint staff, this undersea superiority study, which we expect to have delivery here this summer, and our own work on—this goes back to how do you leverage the capabilities of your submarine force because of its covertness and its access? And how do you leverage the investment we are making in SSGN?

So I do not know the answer. But I am telling you, I am suggesting these are areas that we are looking at very strongly to make sure we make the proper investment in our total submarine force.

Mr. LANGEVIN. I see my time has expired. Obviously, I will look forward to seeing the results of that study this summer and following up on this issue. Thank you.

Mr. BARTLETT. Thank you.

Mr. Young, was there a plus-up in the R&D accounts anticipating their use for DD(X) and LCS?

Secretary YOUNG. I cannot say there was a plus-up to the accounts.

Mr. BARTLETT. Let me go back to my concern that I expressed in my opening statement. And what we see here is another example of the tyranny urgent, which always takes precedence over the important.

We have been systematically starving basic research and R&D because of our need for procurement. Are we not making that problem worse by taking R&D funds for the first ships of DD(X) and LCS?

This seems pretty much the equivalent of the farmer eating his seed corn. Few farmers are dumb enough to do that. But we seem to be doing it.

And the next question is, there are very likely to be cost overruns here. There usually are in these first developments. How are we going to keep from making a bad matter worse?

We had too few R&D funds to start with. We are now using them for something they have not traditionally been used for, so we are further decimating these accounts. And now there is likely to be

overruns, which will further devour the R&D budget, squeezing out those essential research and R&D projects which are necessary, essential, if we are going to have the best platforms after this.

Secretary YOUNG. Again, my colleagues can almost certainly expand on this, but I will offer a starting discussion. In fiscal year 2004, the Navy RDT&E account was \$14.1 billion. In fiscal year 2005, I believe it is \$15.4 billion.

So there is an increase in that account that more than covers the amount of funds I indicated earlier are the payments on LCS and DD(X) lead ship construction. But I think, to the secretary's goal and led by Admiral Nathman and then followed by Admiral Dawson, we seek to build a budget each year that delivers capability and addresses what the needs and requirements of the sailors and marines are and within that, allocate funds accordingly.

I think there are not generally viewed to be fences between accounts. And at the end of the day, when we live through what we have lived through, of having \$3 billion of prior year completion bills, something in the Navy, some \$3 billion of something did not get done as long as our top line stayed the same.

And that effort to pay those bills reaches into personnel, O&M and it inevitably reaches into RDT&E procurement. So when we misestimate the cost today, we pay for it in an adverse way where we have to go back and take programs out and come to you and ask for prior year completion monies.

We are asking to have a chance to make more managed adjustments to the budget and manage our way through a problem, instead of buy our way out of a problem, which is frequently a more costly solution.

Mr. BARTLETT. In another life, I had the opportunity, the privilege, of working for the Navy and observed there this tension between R&D and fleet maintenance. And the same organization had responsibility for both.

Guess which one always took precedence? It was fleet maintenance and putting out the fires in the fleet; where if they had been able to spend their time and energy in developing new components, they would not have had so many fires to put out.

So I kind of think there needs to be a firewall between these because it is just so easy to decimate R&D and basic research accounts because you are not going to pay a penalty for that tomorrow. It will be the day after tomorrow. And that may be on somebody else's watch.

And so our goal here is to get reelected. And the President's goal is to get reelected. And industry's goal is to have a nice quarterly report at the next meeting or the stockholders may be very unhappy and their stocks may drop.

Admiral NATHMAN. Mr. Chairman.

Mr. BARTLETT. But somehow, we have to protect these accounts because they are so easy to plunder when the consequences are not going to be tomorrow, but rather the day after tomorrow.

I understand that we are retiring ships that have a meaningful amount of their hull life remaining; that we are doing this because they are inefficient to use, it takes too many people to man them. They do not have the latest technology on board.

We do have a modernization program. And you mentioned, Mr. Secretary, the modernization of the CG-47. If that is appropriate, why would modernization of the DDG-51s not also be appropriate?

And could we not spend money doing that to fill this trough or this bathtub and thus to push off our need to immediately embark on the DD(X), for which I understand GAO indicated there were 12 different technologies which need to be mature to successfully build that ship and that for only 2 of them was there a meaningful off ramp now. Why isn't looking more intensely at modernization of the ships that are out there with a whole lot more hull life, whether that makes sense and thus we do not need to embark on a development which may be fraught with difficulties? Because if GAO is correct, there are only 2 of the 12 essential technologies for which there is a meaningful off ramp, if we cannot mature those in the timescale we anticipate?

Admiral NATHMAN. Sir, a couple of comments. The cruisers that we are decommissioning have reached a stage of warfighting obsolescence that it would take a tremendous amount of money.

Mr. BARTLETT. But they do have a lot of hull life remaining?

Admiral NATHMAN. They have some hull life remaining. That is correct, sir.

Mr. BARTLETT. And we are modernizing some of them.

Admiral NATHMAN. We are, sir, because those are the ones—

Mr. BARTLETT. My question is: why do we not modernize more of them and fill this bathtub and push off the need to build a ship for which the technology admittedly are not now mature?

Admiral NATHMAN. Well, sir, you asked a series of questions here. And maybe I can take them one at a time and try to answer them.

But the cruisers that we are modernizing are the ones that we feel like we have the most leverage on, in terms of bringing up to modern warfighting standards. And we made a very deliberate choice on what cruisers we would modernize, based on that cost trade, as well as the ability to modernize to a high warfighting standard. And you can see us making that investment.

It is interesting to me, that does not count as a shipbuilding account because it is in OPN primarily, so we do not even get credit for that in terms of the numbers. But we do have a significant investment right now in cruiser modernization to bring them up to very high standards.

The CNO has directed us to look at a DDG modernization account for 2006 primarily because we are studying now how to do that. But to start the modernization effort around our DDGs.

But the question you ask about, you are asking a warfighting trade here between modernizing older cruisers or building DD(X). And see, DD(X) is about delivering fires for the Marine Corps. It is a mission change for us, based on the Marine Corps needs in fires.

So we are doing two things. In CG modernization—excuse me, in DDGs, we are investing in a weapons system called the 5-inch/62 and a round to deliver that. We are also investing in trying to close the fires gap by building DD(X).

So what we are trying to do there is go to a warfighting gap that you cannot get on your current cruisers. So it is really a

warfighting issue about how you go buy that leverage for surface fires for closing the gap on total fires for the Marine maneuver scheme.

So that is why we are headed that way. I think Secretary Young may want to discuss about the issues of risk in the EDMs for DD(X).

Secretary YOUNG. Mr. Chairman, actually I just wanted to not leave the committee with a wrong impression. When we proceed—and as Admiral Nathman noted, the CNO is asking for an evaluation of a DDG upgrade or modernization program. That program is likely, under the rules and restrictions I live in from Congress, to be a competitive program that can be done by small yards or in any number of places.

There is no guarantee that that will be put at a yard that is a new construction yard that has an industrial base gap. And I do not have necessarily valid tools to steer it in one place.

Mr. BARTLETT. But if that were not there, could the deep water cutters not potentially be there? There are just a lot of things that we need to be looking at. And I am not certain that because it crosses cabinet lines and so forth that we are really looking at all of these options.

Mr. O'Rourke, do you have an observation?

Mr. O'ROURKE. In terms of DDG modernization, beyond those things, in terms of updating like the C4I equipment on board this ship, I am aware of another option to back fit automated equipment onto the DDG so as to significantly reduce the size of their crews, taking the crew from something on the order of 300 people to potentially something on the order of 200 people. That is a forward-fit option for DDGs under construction—or could be—but it is also a back-fit option for existing DDGs.

And that could become a part of the DDG modernization effort that Secretary Young says the CNO wants to have considered. I am not sure where on the menu it is, but it could become part of that.

In terms of the five oldest CG-47s, which are the ones scheduled to be deactivated and retired, they would need a lot more work than the later CG-47s, the later baselines. If there is an argument for doing those ships, it is to say that well, the Navy, among other things, does not have a plan right now for its future size and structure, so it cannot be certain at this point technically that it will not need those ships in the future, should the plan, when we arrive at it, call for a certain number of surface combatants.

Furthermore, the Navy has an emerging role in missile defense. And if that role requires a fairly significant number of Navy surface combatants, then there may be a utility for modernizing those five earliest CG-47s, in part to provide missile defense platforms that contribute to that role.

In terms of the change in mission, that is absolutely right. Keeping old DD-963s or old CG-47s around or modernizing the DDG-51s will not do anything to close the naval surface fire support gap. That is more of an issue of analyzing what our needs for naval surface fire support capability in the future are going to be.

And if you do believe that you need it, then you need to put into service ships that can bring those guns to bear. And then it be-

comes a question of whether the DD(X) program is the right way to do that or not.

And if you do not think that the mission requirement is there because we are in era of changing warfare requirements and changing ways of conducting land warfare, then perhaps that is not a requirement that needs to be chased.

Mr. BARTLETT. Well, thank you. I would like to yield for a moment to Mr. Taylor for any comments or follow-on questions he would like.

Mr. TAYLOR. Thank you, Mr. Chairman. I think you have asked—and the whole group has asked—some great questions.

Mr. O'Rourke, has there ever been a precedent for the Navy including as many new concepts on a ship as they will be with the DD(X)? You know, you often hear that this vessel was used as a test platform for a gun or for a radar or for a drive mechanism.

And the chairman has me thinking about the first block of the CGs. It just strikes me, with this shrinking fleet, that we are getting ready to retire 5 ships that are, off the top of my head, somewhere between 17 and 20 years old.

It just strikes me as a terrible waste of taxpayers' resources. And could not those platforms be used as test platforms for some of the things that are going to the DD(X), rather than, in effect, rolling the dice on an "all or nothing" outcome with the DD(X), with so many new technologies?

Mr. O'ROURKE. I guess I heard two parts to that question. The first was: is there a precedent for having this many number of new technologies in a new class of Navy ships?

Mr. TAYLOR. And I really want to open that up to the panel. I do not want the admirals to sit there and bite their tongues off if they have a substantially different answer.

Mr. O'ROURKE. My own answer would be that I think if you went far back enough in history, you would find ships, even the Iron-Clad Monitors, that represented a complete change from what had gone before.

When I addressed that issue in my own writing on the DD(X) program, what I said is that this is the largest number of new technologies to be in a new class of surface combatants in several decades. That was my answer to it.

And in terms of the utility of the CG-47s, if we are in a situation where we do not know what our future requirements are, then that might argue in favor of, at a minimum, making sure we do not take any irreversible steps in retiring those ships if we decide later that, in fact, we might want to bring them back into service in some form, with modernization and maybe a mission reorientation where they might be useful.

And so if you are going to retire the ships, then one question would be: what form of preservation will they be kept under if it turns out that there is a requirement and a usefulness in having those ships put back into the fleet?

Admiral NATHMAN. The short answer is: if you want to restore the old ones, you might as well build new, sir. I mean, it is really an affordability issue in terms of the amount of modernization you need in both combat system, the missile system, from a launcher

system to VLS (vertical launch system), to the amount of room that you have on them. And then you face the aging issues of the hull.

So the question is: if you have a 1984 Suburban, do you want to buy new motor, new seats, new power steering gear, new four-wheel drive on it? Because that is kind of where we are. So it still looks like a 1984 Suburban. But it is not going to deliver what we are going to need.

We are not trying to buy a Suburban anymore. We are trying to buy—in this case, the analogy is we are trying to buy something that delivers the naval fire.

So we need to go to a new mission area. We do not need to preserve old.

And part of our issue here is an affordability issue about if you are going to generate some liquidity in your budget and you want to buy the new mission that you need to buy, you need to look for those opportunities to walk away from old where it makes sense. And we have a very strong warfighting case and a very strong business case about why we need to walk away from those older ships.

So it does, in the near term, marginalize our ship count. But in the far term, it creates the opportunity to go to the mission area we need to go to and devise ships that are going to be effective.

Now the CNO recognized, to the panel's point, that we should be looking at modernization accounts from the very beginning with any class of ship. And so the CNO has directed us to go and provide him alternatives and studies and in what we can leverage in our new classes of ships—our DDG-51s and our cruisers.

So we have our cruiser modernization plan. And I believe we will soon look at an affordable DDG-51 plan.

Mr. Chairman, you talked a lot about R&D and leveraging R&D and eating our seed corn. I think, so I will not have to bite my tongue anymore, to Mr. Taylor's point, one of the things I think the panel needs to understand is the Navy is trying to protect R&D in several critical areas.

In aircraft, we are protecting—our R&D investment is in JSF. And it is all about protecting the ability to move ahead in tactical air.

In submarines, it is all in subtech in *Virginia* Class R&D because that is the hull that we are going to leverage for many years to come. And we need to keep a steady stream of R&D into that class of ship.

And in shipbuilding, primarily our R&D investment of our future is in DD(X) because it does not just leverage DD(X). The R&D investment in the EDMs for DD(X) leverage CG(X), which is going to be our truly our missile defense ship of the future, as well as our air defense ship of the future, is going to leverage CVN-21 and those technologies, not only in terms of reducing people, combat systems, open architecture and a total computing ship environment.

And so we are protecting, in one ship line called DD(X) in the R&D, we are protecting the shipbuilding R&D for the U.S. Navy in that particular line. That is why that ship is so critical to us.

But I think you should appreciate the fact that we see it the same way, that you need to have a significant R&D investment out

there to keep your seed corn and your new ideas alive and deliver. And with any R&D, there is always risk.

And that is why we looked at the risk in the EDMs and we said: how can you answer that? And what are the off ramps in those EDMs to provide for some characterization that, if you are having real trouble and you cannot deliver, do you have an off ramp? And I think we are protecting that inside the EDM analysis and certainly inside the EDM structure that we created for DD(X).

Mr. TAYLOR. Admiral, my next question would be going back to a point that Mr. O'Rourke made, playing devil's advocate. What if, for some reason, DD(X) is slipped or, God forbid, we get delivery and the electric drive does not turn out to be as good as we thought? Or the gun system does not work? Or some major foul-up along the line?

I happen to have been here for the C-17 procurement, which seems to have taken a lifetime and a half. I have seen the A-12 cancelled, the Comanche cancelled.

So there is certainly precedent for things going wrong. Going back to Mr. O'Rourke's question, what level of confidence do I have that those Block 1 of the CGs will be in a position to be brought back? Or is all of this some sort of a larger plan to almost immediately transfer the still—in my opinion—capable ships to an ally?

What becomes of the CGs? Are we budgeting in the future to maintain them? Or are we anticipating that they will be transferred to the Taiwanese or the Egyptians or someone like that?

What becomes of them? Are they there to grab bag, so to speak? Or are they, once they are tied up, are they gone forever?

Admiral DAWSON. I would like to—

Mr. TAYLOR. Someone has to be talking about it. Someone has to be budgeting it because you are getting ready to tie these ships up in relatively short order.

Admiral DAWSON. Sir, I do not think as of yet we have made any decisions on the disposition of those ships.

Mr. TAYLOR. At what point would you start budgeting to maintain them in some sort of a high degree of mothball status, if you were going to do that? What is the normal procedure for that?

Admiral DAWSON. Sir, I do not have the exact date and answer to that. I would like to take that for the record and provide you that answer.

Mr. TAYLOR. Would you please?

Secretary Young, can you help me with that?

Secretary YOUNG. I certainly can get you the answer for the record. I do not know the CNO's retirement plans for the fleet. But you are exactly right. We would have to either have mothballing, decommissioning or transfer—hopefully not transfer costs—in the budget.

We will get it for the record, sir. I do not know it right off the top of my head.

[The information referred to can be found in the Appendix beginning on page 456.]

Mr. TAYLOR. Because the *Yorktown*, I think, is either getting ready to or has actually begun its last deployment. They are talking about tying it up this fall, if I am not mistaken, which would

mean for the 2005 budget, we would have to have something in there if you are going to maintain it or otherwise.

Admiral NATHMAN. I think we are taking this for the record, sir, because we do not know the disposition. There are several levels of disposition, as you are aware, in terms of if you lay the ship up, in terms of getting it—it could be near-term ready or you are going to make a final disposition decision.

That determines the certain status of the ship in terms of its inactivation. We just do not know.

[The information referred to can be found in the Appendix beginning on page 456.]

Mr. TAYLOR. That is one for the record. And I do very much appreciate all of you staying here so long.

A few years back, I had the opportunity to visit David Taylor on the edge of town and was very much impressed with a modular concept they had for double-hull tankers. It just seemed to do a lot of very smart things and it showed a lot of engineering prowess went into it.

To the best of my knowledge, no one in the American commercial industry ever used any of that. How often are the designs that come out of David Taylor actually put into use for our Navy or private sector shipyards? I realize that it is great to have that capability, but I would feel even better about it if that capability was actually put into use and we could show the taxpayers where something good comes of that.

Secretary YOUNG. I do not know if I can give you a specific answer. I will give you an overview answer; and that is, because of Congress, I have the authority to sign, I guess, a grant that public entities like David Taylor can be made part of an industry team up to a certain dollar threshold. And I have signed those in several instances, where we have unique capabilities.

I believe, for example, Dahlgren, which has special skills and combat systems, is essentially a paid member of the DD(X) national team for the combat system. I do not recall for sure whether David Taylor is.

There is no question in my mind David Taylor is party to—they have been conducting the hull trials on the scale model, where DD(X) has successfully traveled through Sea State 8 in hurricane conditions. And so they are partners, at least from the public side, on refining that DD(X) hull design for its performance in various sea states. And they may even be a contracted part of the national team, through the authorities Congress has given me.

Industry has to make a choice that they want to use those skills. And so in that regard, I would say it is a little bit like the commercial marketplace you would expect in America.

They have the skills. They become part of the team. We make them available.

Mr. TAYLOR. For the record, could I ask folks at David Taylor to supply me the five most recent things that they have done that have actually been transferred, either to a naval vessel or a commercial vessel? In technologies?

Secretary YOUNG. Sure. Absolutely.

[The information referred to can be found in the Appendix beginning on page 456.]

Mr. TAYLOR. Mr. Chairman, thank you very much.

Mr. BARTLETT. Thank you very much.

I wanted to ask a question that I asked on March 11. Admiral Nathman, section 216 of the 2004 National Defense Authorization Act directed the Secretary of Defense to provide for the performance of two independent studies that would recommend future fleet architecture to the Navy; one study to be performed by the Office of Force Transformation and the other by a federally funded research and development center—FFRDC—such as the Institute for Defense Analysis.

Studies are to be reported to the congressional defense committees not later than January 15, 2005. The Office of Force Transformation has briefed me on the status and approach to their study.

I understand that the Secretary of Defense has delegated the other study that is to be conducted to the Navy for selection of the FFRDC. What is the status of the Navy study? And when can I receive a briefing on the approach that is to be taken?

Admiral NATHMAN. Yes, sir. If I could take that one for the record and give you a very specific answer on the details?

Mr. BARTLETT. Okay. Well, we took that for the record on the 11th.

Admiral NATHMAN. Yes, sir.

[The information referred to can be found in the Appendix beginning on page 429.]

Mr. BARTLETT. Okay. We will ask it again at our next subcommittee hearing if you do not get back to us with answer before that.

Admiral NATHMAN. I will find some staff and wring their necks, sir. You should have that. We have that answer, but it is a very detailed answer about the assumptions. And I want to make sure I am very accurate on that.

Mr. BARTLETT. Okay. Looking forward to it. Thank you very much.

Gasoline is now approaching \$2 a gallon. Very soon, it will cost a little more than water in the grocery store, which may get our attention.

As gasoline goes up, fuel for our Navy goes up. At some point, we need to ask the question: how much more of our surface fleet ought to be nuclear powered? And it is not just about cost because some of that is, as the television ad said, some things are priceless.

Freeing us from a long supply chain and refueling once every 30 years just has to have some big advantages. Is there a study as to what point in time, relative to the increasing cost of fuels, that it is appropriate to consider more of our surface fleet being nuclear?

Admiral NATHMAN. I am not aware of a study that looks at that now. But I will go find out for you, sir, if there is one.

Mr. BARTLETT. As I say, it just is not the cost of fuel. And I am not sure that we really have a good fix on total lifecycle costs.

I do not know what kind of a dollar value to attribute to being totally free of crude oil produced in the Arab world; I do not know what kind of a dollar value to attach to being totally freed from a long supply chain, which may or may not be there.

I would submit that if the *Cole* had been nuclear powered, it would not have been in that port, would it?

Admiral NATHMAN. Well, sir, I will tell you, we are not naïve about this. We have had a history of having nuclear powered surface ships—*Truxtun, Texas, California*, more than that.

But part of this is, you know, a lot of the reasons for us making this original investment were some assumptions about disposition of these ships. And I think we all found out that the disposition of these ships was a lot more expensive than we ever expected them to be.

So we have made investments in nuclear power and wanted to drive up the operational availability of ships that need really high speed, really high dash requirements, like aircraft carriers, or unique requirements to be underwater for a long time, like submarines. So I personally believe that our investment in nuclear powered warships is about right.

I think what you will find is when we find the tradeoffs for near-term operational costs—but we should go look into this because of the chairman's question. But when you go look at those trades between near-term operation and sustainability (O and S) costs, but then you look at the far-term trade about disposition of nuclear components and the cleaning and requirements—the “green side,” as it were—for the disposition of those ships, I think we all have found that the cost associated with that has been quite expensive. And we need to make that as part of our total calculi on this investment.

So I believe right now we have made very good investments in nuclear-powered warships.

Mr. BARTLETT. That is true, that in the past, the spent fuel has been a liability.

Admiral NATHMAN. Yes, sir.

Mr. BARTLETT. New technologies might actually make it an asset. There are now new technologies which could make this something of value, rather than something which is very costly to handle and dispose of.

But with the cost of fuel going up and with the prospect that it may not be coming down much, I think we need to take a new look at that.

Before we close—and the votes are imminent. They told us they would be starting ten minutes ago and so they are going to start shortly.

I would like to ask if my other panel members have any questions? Well, I want to thank you all very much. Oh, this is an oversight committee. There are questions we have to have answers to.

We did not have time to ask them all. With your permission, rather than keep you here for the next two or three hours, could we submit them to you for the record?

Okay, you are all nodding your heads.

Admiral NATHMAN. We promise to answer them too, sir. [Laughter.]

Mr. BARTLETT. Thank you very much. We are in adjournment.

[Whereupon, at 3:38 p.m., the subcommittee was adjourned.]

A P P E N D I X

MARCH 30, 2004

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

MARCH 30, 2004

Statement of the Honorable Roscoe Bartlett
Chairman, Subcommittee on Projection Forces

Navy Projection Forces Hearing

March 30, 2004

The Subcommittee will come to order.

This afternoon we will receive testimony from witnesses representing the Department of the Navy, the Congressional Research Service, and the shipbuilding industry on the President's fiscal year 2005 budget request for the Navy's shipbuilding program and force structure.

Before we proceed, I want to commend our men and women serving in all of our military services throughout the world, coalition personnel, and those supporting them, for their dedication and professionalism.

The security challenges confronting our nation today are complex. We face the necessity to balance the expenditures to meet today's military requirements with the investment for the future

through research and development. We also face the necessity to reach the proper balance between required capabilities and maintaining the shipbuilding industrial base, within our constrained resources.

Our purpose today is to ensure that, for fiscal year 2005 and beyond, the Navy and Marine Corps continue to be provided the proper resources to achieve the right balance of force structure and capabilities to meet new challenges that surely lay ahead.

Fundamental to this issue is determining what the present and projected threats are, and deriving from the best available information what capabilities are required to meet those threats. As was demonstrated in both Operation Enduring Freedom and Operation Iraqi Freedom, any future conflict will require the contribution of all the military services. This means, as we seek to determine what capabilities are required by the Navy and Marine Corps, we must also bear in mind the contributions of the other Services.

In my mind, we have no peer adversary now and I question if we will have one in the foreseeable future. Lacking a major threat, in my opinion, this nation should increase emphasis on research and development of truly innovative capabilities for the future rather than rushing to field the next generation capability immediately.

Secretary Young, I am very pleased that you have agreed to be with us today. I want to continue our dialog from our recent hearing on research and development to gain a sense that the Navy's emerging force structure results from valid, realistic requirements and new concepts of operation rather than seeking an arbitrary number of ships in the force structure.

I have a number of concerns. To mention a few:

In my view, given state-of-the-art technology available, we have too many people on our ships. Further, we seem to have a new plan every year for how many and what type of ships we want to build. Finally, costs seem to be an independent variable – ship costs seem to grow dramatically with each year's budget submission.

Secretary Young, I look forward to your testimony and comments, and those of the other witnesses, on the details of the process that gets us to the mix of ships – numbers, size, missions, etc., that are assumed in this budget.

As we begin this hearing today, the U. S. Navy now operates a combat fleet of about 291 surface ships and submarines, although the recent Quadrennial Defense Review recommended a force structure that equates to approximately 310 ships.

The budget request includes a forecast of a low of 290 ships in fiscal year 2005, before rising to 309 by fiscal year 2009. While some argue that the end of the Cold War and the improved combat capabilities of today's modern warships permit a much smaller Navy than would have been required only a decade ago, it's important to note that the Navy's peacetime forward presence requirements have not changed significantly since the end of the Cold War. Indeed, in some respects, those presence requirements for today's smaller Navy have increased as illustrated by continuing large-scale presence missions in the Mediterranean, the Western Pacific, the Indian Ocean,

and most recently in the Persian Gulf region during Operations Enduring Freedom and Iraqi Freedom.

For fiscal year 2005, the Navy's shipbuilding budget request is \$11.1 billion. This year, the budget request includes nine new ships. From fiscal years 2005 through 2009, 48 new construction ships are planned. To accomplish this objective, we will need to overcome challenges to the increased costs of new construction such as those in the Virginia Class submarine and LPD-17 programs.

To address these and other important Navy force projection issues, I would like to welcome today's witnesses:

First,

The Honorable John J. Young, Jr.
Assistant Secretary of the Navy for
Research, Development & Acquisition

Second,

Vice Admiral John B. Nathman, U. S. Navy
Deputy Chief of Naval Operations for
Warfare Requirements and Programs

Next,

Vice Admiral James C. Dawson
Deputy Chief of Naval Operations for
Resources, Requirements, and Assessments

And finally, at the witness table,

Ms. Cynthia Brown

President

American Shipbuilding Association

Before we begin let me call on my friend, the gentleman from Mississippi, the ranking Member of the subcommittee, Gene Taylor, for any remarks he would care to make.

After Mr. Taylor's remarks:

[If Mr. Hunter is present, defer to him for remarks]

[If Mr. Skelton is present, defer to him for remarks]

PANEL 1

Ms. Brown, your written statement and those of other witnesses

will, without objection, be entered into the hearing record. Please proceed with your brief opening remarks so we have an adequate opportunity for members' questions.

[After Ms. Brown finishes:]

(Questions)

Secretary Young, your combined Navy testimony will, without objection, be entered into the hearing record, please proceed with your oral statement.

[After Sec Young finishes:]

Mr. O'Rourke, nice to see you again, please proceed with your opening comments.

[After Mr. O'Rourke finishes:]

(Questions)



208 PENNSYLVANIA AVE.
SUITE 1100
WASHINGTON, DC 20003
TEL: 202/344-8127
FAX: 202/344-8132
WWW.ASHBAULT-AMSHIPBUILDING.COM

**AMERICAN
SHIPBUILDING**
ASSOCIATION

Statement of

Ms. Cynthia L. Brown

President

American Shipbuilding Association

Before the

House Armed Services Committee

Subcommittee on Projection Forces

March 30, 2004

AVONDALE
NEW ORLEANS, LOUISIANA

BATH IRON WORKS CORPORATION
BATH, MAINE

ELECTRIC BOAT CORPORATION
GRATON, CONNECTICUT

INGALLS
PASCAGOULA, MISSISSIPPI

NATIONAL STEEL AND
SHIPBUILDING COMPANY
SAN DIEGO, CALIFORNIA

NEWPORT NEWS SHIPBUILDING
NEWPORT NEWS, VIRGINIA

Thank you, Mr. Chairman, Members of the Subcommittee, for this opportunity to testify on the Navy's shipbuilding procurement budget, and the impact these budgets have on the defense shipbuilding industrial base and our national security.

The American Shipbuilding Association is the national trade association of the six largest shipbuilders in the United States that build all of the capital ships for the U.S. Navy, and more than 30 companies engaged in the design, manufacture, and service of ship systems and components. The shipbuilding industry is in every state of the Union but for three. A list of the ASA membership is attached.

This Subcommittee is well aware that Fleet Commanders have, for many years now, been calling for a much larger and more capable fleet than the 294-ship Navy of today. While their stated requirements have ranged from a high of 400 ships, the lowest level on record is the 305 to 310 ships called for in the 2001 DOD QDR. That study also acknowledged risks associated with a fleet of that limited size. Alarming, the fleet has already shrunk below the minimum risk constrained requirement.

One only has to look at the war in Iraq to understand that America needs a larger and more capable fleet. For the initial phase of the war, which was of relatively short duration, 70 percent of the Navy's surface fleet and 50 percent of its submarine fleet were deployed to Iraq. The remaining ships were either

undergoing repair or engaged in security patrols in other troubled regions of the world. This deployment rate was the highest since World War II, and it underscored why our naval fleet is stretched too thin.

The fleet has been cut in half since 1987. As the fleet has shrunk, there has been a corresponding decline in the defense shipbuilding industrial base. The average ship production rate enters the 13th year of just six new ships a year. Six ships a year is the lowest naval production rate since 1932. Thirteen years, however, is a historical first for the most prolonged period of such low production rates. If these shipbuilding budgets continue, the Nation will witness the continued diminution of the fleet, and America will lose the industrial capability to ever rebuild her.

Since the fall of the Berlin Wall, the defense shipbuilding industry of this country has been reduced by more than half. More than 30 thousand jobs for our highly trained engineers and production people in the shipyards have been eliminated, and more than 150 thousand skilled engineers and manufacturers have lost their jobs throughout the shipbuilding supplier base.

A decade and a half of underinvestment in naval power has left the country with just two shipyards to design and build nuclear warships; two to design and build multi-mission surface combatants; and two to design and build auxiliary and combat logistics force ships. The loss of any of these six remaining shipyards will result in just one source for these classes of highly specialized naval ships.

In the supplier base, we had two or three manufacturers of each of the many critical ship systems and components. Today, only one remains for each of many of these components, and that remaining manufacturer is often hanging by a thread. For example, 75% of the critical component manufacturers on the *Virginia Class* of attack submarines are the last and only source for their product.

In short, the fragility of the defense shipbuilding industrial base cannot be overstated. This alarming security situation means that any disruption, delay, or reduction in shipbuilding production programs will have significant cost implications for every program in the Navy's budget, and immense implications for our Nation's future as a sea power.

There are several recent examples to demonstrate this fragility. Last year's DOD budget proposed gapping production of the LPD-17 program by one year. Congress reversed this decision. Had you not, the shipyard would have been forced to lay-off more than 2,000 highly trained shipbuilders. This would have raised the shipyard's cost in building future LPD-17's because of the investment it would have had to make to recruit and train 2,000 new employees when scheduled production resumed. Yes, some of the former employees would have returned, but not all. A year gap would have impacted productivity of the returning skilled workers, and it would have taken years to train the new hires to achieve the skill level of the employees they replaced. It costs a minimum of \$50,000 to recruit and train each shipyard production worker to achieve minimum proficiency in their

trade. Multiply this figure by thousands, and it is easy to understand the high cost of training. Shipbuilding disruptions cost money – costs which are passed on to the taxpayer in higher priced ships.

In the supplier base, that one year gap in orders for LPD critical ship components could have forced some companies out of business, and it would have significantly raised the cost of components not only for the LPD-17 program, but for other ship programs for which they also supply components and systems.

We can't afford to have history repeat itself. In the late 1980's the Navy decided to end production of the *Los Angeles Class* of attack submarines as it transitioned to the final design and production start of the *Sea Wolf Class*. When the Soviet Union fell, the *Sea Wolf* program was canceled after just three boats. The sudden and dramatic break in submarine production, before the follow-on SSN-774 was ready for production, brought the submarine industrial base to its knees. The *Sea Wolf* builder was forced to lay-off thousands of people, and re-engineer the shipyard to survive low rates of production in the transition to the next submarine program. Hundreds of critical system and component manufacturers were forced out of business, and those that survived the hiatus did so as much smaller companies.

Early termination of the *Sea Wolf* program, also drove up the unit cost of each *Sea Wolf* because there were only three boats to absorb all research, design, and industry overhead costs in the shipyard and throughout the supplier base. It

was a struggle for survival that came at a high cost to the Nation. The country has yet to recover from this cost because of the continued production of just one SSN-774 a year.

The Navy's FYDP proposes the construction of nine new ships in FY05, with the most notable addition being the first ship of the new class of DDX destroyers. The American Shipbuilding Association commends the Administration for the increase in numbers of ships proposed in FY05 over previous years, and strongly supports the budget request. There are, however, very serious industrial and security risks associated with the budget in 06 as the number of ships again drop to six.

In 06 there are zero multi-mission surface combatants in the budget. The budget terminates production of the DDG-51 at the end of 05 as detail design for the DDX begins with construction commencement of the first ship of the class planned for mid FY07. This year and a half production gap poses a tremendous risk to the naval shipbuilding industrial base. If extended, this gap will result in thousands of job losses in both surface combatant yards and their suppliers as the industry transitions from a mature production program of DDG's to a new class of destroyers. It is imperative that Congress assist the Navy in its efforts to keep the DDX program fully funded and on schedule.

The other shortfall in the FYDP is in the submarine program. Production of the *Virginia Class* needs to be increased to two per year as soon as possible to

realize reduced unit prices for each submarine and to stabilize the specialty nuclear manufacturers.

In closing, I would like to point out that since the mid-1990's my industry has consistently stressed to DOD, Congress, and anyone who will listen, the urgent need for higher, stable rates of naval ship production. I make this same plea to you today for one purpose, and one purpose only – NATIONAL SECURITY.

Look at Great Britain, which ceased to invest in sea power and ceased to be a world power. As a result, Great Britain did not have a Navy capable of projecting sufficient power to South America in the 1980's to defend the Falkland Islands against a small country with limited military capability. Great Britain ultimately succeeded in the Falklands because of the help of the United States.

Every day the Nation delays in making investment in our naval fleet a priority, the country loses people from the skill base and facilities essential to our national security. Stretched and gapped programs dramatically escalate the cost of building a Navy. It takes three to seven years to construct each of our highly sophisticated and survivable naval ships. It takes the same number of years, if not more, to train our highly skilled workforce, and the industry as a whole represents a capital facility investment of billions and billions of dollars.

When America loses its shipbuilding industrial base, the United States will be forced to depend upon other countries to build and maintain a naval fleet to defend our homeland, and our economic security interests. What country can we

rely on for our defense? The fastest growing shipbuilding country in the world is China. The fastest growing economy is China, and China is investing heavily in building her naval power. Will China defend America?

I want to commend Representatives Jo Ann Davis and Gene Taylor for sponsoring H.R. 375, which states that it is the national policy to build and maintain a naval fleet of at least 375 ships as soon as possible. I want to thank you, Mr. Chairman, and all members of this subcommittee for cosponsoring this extremely important legislation. You can act today to reverse the course of our Nation by passing H.R. 375.

Thank you.

Future Years Defense Plan (FYDP) **FY 1992 – 2009** **Number of Naval Ships**

Current Year (Year Submitted)	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09
Bush I																		
	1992	(11)	6	4	9	6	8											
Clinton	1993		(7)	6	*	*	*											
	1994		(4)	4	5	4	6	7										
	1995			(4)	3	3	4	4	7	6								
	1996				(5)	4	4	5	7	5								
	1997					(4)	4	5	5	6	5	6						
	1998						(5)	5	5	7	7	7						
	1999							(5)	6	8	8	8	8	9				
Bush II	2000								(6)	8	8	8	8	7				
	2001									(6)	6	*	*	*	*	*		
	2002										(6)	5	5	7	7	10		
	2003											(5)	7	8	7	7	9	14
	2004												(7)	9	6	8	8	17

* Not Available – No FYDP
 () Actual # Appropriated

Source American Shipbuilding Association
 Highlights of Navy Budget



600 PENNSYLVANIA AVE. SE
SUITE 300
WASHINGTON, DC 20003
TEL 202.544.8170
FAX 202.544.8252
WWW.AMERICANSHIPBUILDING.COM

**AMERICAN
SHIPBUILDING**
ASSOCIATION

Membership of the American Shipbuilding Association

Shipyards

Avondale
New Orleans, LA

Bath Iron Works Corporation
Bath, ME

Electric Boat Corporation
Groton, CT
Quonset Point, RI

Ingalls Shipbuilding
Pascagoula, MS

National Steel & Shipbuilding Co.
San Diego, CA

Newport News Shipbuilding
Newport News, VA

BWX Technologies, Inc.
Lynchburg, VA

Corrosion Engineering Services
San Diego, CA

Dresser-Rand
Olean, NY

DRS Technologies
Parsippany, NJ

EMS Development Corporation
Yaphank, NY

EDS-PLM Solutions
Maryland Heights, MO

Fairbanks Morse
Beloit, WI

G. E. Marine
Cincinnati, OH and
Lynn, MA

General Atomics
San Diego, CA

Henschel
Newburyport, MA

Partners

Advanced Structures Corp.
Deer Park, NY

American Iron & Steel Institute
Washington, DC

Battelle
Columbus, Ohio

AVONDALE
NEW ORLEANS, LOUISIANA

BATH IRON WORKS CORPORATION
BATH, MAINE

ELECTRIC BOAT CORPORATION
GROTON, CONNECTICUT

INGALLS
PASCAGOULA, MISSISSIPPI

NATIONAL STEEL AND
SHIPBUILDING COMPANY
SAN DIEGO, CALIFORNIA

NEWPORT NEWS SHIPBUILDING
NEWPORT NEWS, VIRGINIA

Intergraph Corporation
Huntsville, AL

International Paint
Houston, TX

Jamestown Metal Marine Sales, Inc.
Boca Raton, FL

John J. McMullen Associates
Alexandria, VA

L3 Communications
New York NY

Lockheed Martin
Bethesda, MD

Marlo Coil
High Ridge, MO

OAQ Technology Solutions
Greenbelt, MD

PacOrd
San Diego, CA

Power Paragon
Anaheim, CA

Power Technology Inc.
Fitchburg, MA

Raytheon Integrated Defense Systems
Tewksbury, MA

Rolls-Royce Naval Marine,
Bird-Johnson
Walpole, MA

Sherwin-Williams Company
Cleveland, OH

SPD Electrical Systems
Philadelphia, PA

Sperry Marine
Charlottesville, VA

Spiritech, Inc.
Johnstown, PA

Tano/EDI
Metaire, LA

Tribon Solutions, Inc.
Annapolis, MD

Triumph Controls, Inc.
North Wales, PA

US Joiner, LLC
Waynesboro, VA

VACCO Industries
South El Monte, CA

Warren Pumps
Warren, MA

Westwood Corp.
Tulsa, OK

York International
York, PA



600 PENNSYLVANIA AVE. SE
SUITE 305
WASHINGTON, DC 20003
TEL 202.544.8170
FAX 202.544.8332
WWW.AMERICANSHIPBUILDING.COM

AMERICAN SHIPBUILDING ASSOCIATION

CYNTHIA L. BROWN PRESIDENT

Cynthia Brown was named President of the American Shipbuilding Association on June 1, 1997. Ms. Brown has over 20 years of experience in government relations and business development. Her experience includes service in the Legislative Branch, Executive Branch, and private industry. She has an established record in formulating, coordinating, and successfully executing winning legislative and business development strategies for private companies and industry trade associations. She is also accomplished in building and spearheading coalitions.

In January of 1997, Ms. Brown founded her own consulting firm, Brown and Company, Inc., after having provided consulting services to small and large defense and transportation manufacturing and high technology firms since 1993. Previously, Ms. Brown served as Vice President of the Shipbuilders Council of America, as Washington representative for the Lockheed California Company's military aircraft programs, as public affairs specialist for NASA, and as defense appropriations aide to U.S. Representative Bill Young.

Ms. Brown earned her B.A. in Political Science from the University of Florida and has studied extensively in Spain and Germany. She is fluent in Spanish.

AVONDALE
NEW ORLEANS, LOUISIANA

BATH IRON WORKS CORPORATION
BATH, MAINE

ELECTRIC BOAT CORPORATION
GROTON, CONNECTICUT

INGALLS
PASCAGOULA, MISSISSIPPI

NATIONAL STEEL AND
SHIPBUILDING COMPANY
SAN DIEGO, CALIFORNIA

NEWPORT NEWS SHIPBUILDING
NEWPORT NEWS, VIRGINIA

NOT FOR PUBLICATION UNTIL RELEASED BY THE
HOUSE ARMED SERVICES COMMITTEE
PROJECTION FORCES SUBCOMMITTEE

STATEMENT OF

THE HONORABLE JOHN J. YOUNG, JR.
ASSISTANT SECRETARY OF THE NAVY
(RESEARCH, DEVELOPMENT, AND ACQUISITION)

AND

VADM JOHN B. NATHMAN
DEPUTY CHIEF OF NAVAL OPERATIONS
WARFARE REQUIREMENTS AND PROGRAMS

AND

VADM JAMES C. DAWSON
DEPUTY CHIEF OF NAVAL OPERATIONS
RESOURCES, REQUIREMENTS AND ASSESSMENTS

BEFORE THE

PROJECTION FORCES SUBCOMMITTEE

OF THE

HOUSE ARMED SERVICES COMMITTEE

ON

FY 2005 NAVY SHIP CONSTRUCTION PROGRAMS

MARCH 30, 2004

NOT FOR PUBLICATION UNTIL RELEASED BY THE
HOUSE ARMED SERVICES COMMITTEE
PROJECTION FORCES SUBCOMMITTEE

Mr. Chairman, distinguished members of the Subcommittee, thank you for this opportunity to appear before you to discuss the Department of the Navy's Fiscal Year (FY) 2005 Shipbuilding programs.

Your Navy and Marine Corps Team's outstanding performance in the Global War on Terrorism (GWOT) and Operations ENDURING FREEDOM (OEF) and IRAQI FREEDOM (OIF) last year underscored the high return on your investment in our combat readiness, our people, and our unique maritime warfighting capabilities. Your return on investment included the lift for 94 percent of the nation's joint warfighting capability. It demonstrated the latest technology in surveillance, command and control and persistent attack operating from sovereign US territory and exploiting the vast maneuver space provided by the sea.

The GWOT, OEF and OIF demonstrated the enormous contributions Naval forces make to the effectiveness of joint and coalition forces. Analyses of these conflicts indicate that the war fighting concepts, capabilities development process, and advanced technologies we are pursuing in our Naval Power 21 vision are on the right vector. Experimentation with forward deployed Expeditionary Strike Groups has increased credible global combat capability with which to fight the war on terror and project power. We have leveraged OIF experience to implement the Fleet Response Plan – increasing the number of Carrier Strike Groups deployed or readily deployable. The Navy and Marine Corps Team now faces a rare inflection point in history with technological infusions and several new ship classes coming on line within the next few years. This year, we will pursue distributed and joint networked solutions that could revolutionize our capability. With the FY 2005 Budget request we intend to:

- **Shape the 21st Century workforce** and deepen the growth and development of our people, and
- **Accelerate our investment in Naval Power 21 to recapitalize and transform** our force and improve its ability to operate as an effective component of our joint war fighting team.

Developing Joint Seabasing Capabilities

As a means of accelerating our investment in Naval Power 21, we are employing the Naval Capability Development Process and Expeditionary Force Development System (EFDS). The Naval Capability Development Process and EFDS take a concepts-to-capabilities approach to direct investment to achieve future warfighting wholeness. The Naval Capability Development Process takes a sea-based, offensive approach that provides power projection and access with distributed and networked forces featuring unmanned and off board nodes with penetrating surveillance via pervasive sensing and displaying that rapidly deliver precision effects. The EFDS assesses, analyzes and integrates MAGTF warfighting concepts, and requirements in a Naval and joint context to support the overarching operational concept of Joint Seabasing. The FY 2005 Shipbuilding Budget request reflects the investments that will most improve our warfighting capability by investing in future sea-based and expeditionary capabilities for the Navy and Marine Corps.

SHIPBUILDING PROGRAMS

Our FY 2005 Budget request calls for construction of nine ships: three ARLEIGH BURKE (DDG 51) Class destroyers; one VIRGINIA (SSN 774) Class submarine; one SAN ANTONIO (LPD 17) Class Amphibious Transport Dock ship; two LEWIS & CLARK (T-AKE) Class Auxiliary Cargo & Ammunition ships; one DD(X); and one Littoral Combat Ship (LCS). If approved, this would increase to 38 the total number of ships authorized and under construction. The FY 2005 Budget request represents an increase of two ships over the seven ships in the FY 2004 program. In addition, we have requested funding for advance procurement of the eighth and ninth VIRGINIA Class submarines, Economic Order Quantity (EOQ) material procurement for the eighth, ninth, and tenth VIRGINIA Class submarines, advance procurement for CVN 21 construction and CVN 70 refueling complex overhaul (RCOH), continued funding for SSGN Engineered Refueling Overhaul (ERO) and conversion, continued funding for LHD 8, funding for TICONDEROGA Class cruiser modernization, and the service life extension for five Landing Craft Air Cushion (LCAC) craft.

These shipbuilding programs are the leading edge of our Naval transformation to the Seabasing concept, which is modularly constructed on four capability pillars. Those pillars are SEA SHIELD, SEA BASE, SEA STRIKE and ForceNet. SEA SHIELD is made up of those components that provide protection and assured access to our forces. SEA BASE is the pillar of capabilities that allows naval forces to exploit the maneuver space provided by U.S. control of the sea. SEA STRIKE includes all of the capabilities within the force that provide offensive fires and maneuver in a complementary synergistic fashion. This includes strike aircraft, missiles, surface fires, and expeditionary maneuver elements. ForceNet is the network that ties these disbursed platforms together through C4ISR nodes to provide robust battle space awareness, precise targeting, rapid and precise fires and maneuver and responsive logistics. We have grouped our shipbuilding programs into each of the four seabasing pillars based on their primary weapon systems however each platform has the ability to perform functions of other pillars as well.

SEA SHIELD

ARLEIGH BURKE (DDG 51) Class Destroyer

The FY 2005 Budget request includes \$3.445 billion for the procurement of the final three ARLEIGH BURKE (DDG 51) Class destroyers. These ships are part of a 10 ship, FY 2002 through FY 2005 Multi Year Procurement (MYP) contract awarded in 2002, which finalized the DDG procurement profile and sustains our industry partners until we transition to DD(X) production.

TICONDEROGA (CG 47) Cruiser Modernization Plan

The FY 2005 Budget request includes \$166 million for systems that will add new mission capabilities and extend the combat system service life of the TICONDEROGA (CG 47) Class. The upgrade of these ships will add new, and enhance existing, combat system capabilities to improve compatibility in joint and coalition warfare environments. Furthermore, these

improvements will upgrade the quality of life for our Sailors and lower the operating costs for those ships.

Littoral Combat Ship (LCS)

The LCS will be a networked, agile, mission focused, stealthy surface combatant with capabilities optimized for responsiveness to threats in the littorals. LCS will utilize core onboard sensors and weapons combined with reconfigurable mission packages employing manned and unmanned vehicles and modular sensors and weapons to execute assigned tasks and operate as a node in a network centric battle force. Primary missions for the ship will include littoral Mine Warfare, littoral Surface Warfare and littoral Anti Submarine Warfare to ensure access of friendly forces in littoral regions. The LCS program awarded contracts to three industry teams in July 2003. The FY 2005 Budget request includes \$352 million of RDT&E funding for LCS platform and mission system development and initial ship procurement. The LCS spiral development acquisition strategy will support construction of multiple flights of focused mission ships and mission packages with progressive capability improvements. Flight 0 is comprised of four ships, with the first ship requested for authorization in FY 2005 using RDT&E, N funds with detail design and construction commencing in FY 2005. Mission modules will deliver in support of the Flight 0 seaframe delivery in FY 2007. Flight 0 will develop and demonstrate several new approaches to Naval warfare including suitability of large-scale modular mission technologies and new operational concepts in the littoral. The industry teams submitted their proposals for final system design and detail design and construction phase in January 2004. The down select to one or two teams for final system design and detail design and construction of Flight 0 is anticipated in late Spring 2004.

VIRGINIA (SSN 774) Class Attack Submarines

With current construction progressing on schedule, the FY 2005 Budget request includes \$2.5 billion for the seventh ship, advance procurement for the eight and ninth ships of the VIRGINIA Class, and Economic Order Quantity (EOQ) material procurement for the eighth, ninth, and tenth VIRGINIA Class submarines. There are a total of ten VIRGINIA Class submarines under contract. This year's ship will be the second ship in the five-ship MYP. This MYP contracting approach provides the Navy savings of \$80M per ship for a total savings of \$400M compared to "block buy" procurement. These ships will continue to be built under the teaming approach adopted by Congress in 1998, which maintains two capable nuclear submarine shipbuilders. In accordance with FY 2004 Congressional direction, procurement of two VIRGINIA Class submarines per year is delayed until FY 2009.

SEA STRIKE

DD(X) Destroyer

The FY 2005 Budget request includes \$1,432 million in RDT&E funds for DD(X) with \$221 million for lead ship detail design and construction. The Navy is two years into the competitively awarded DD(X) design and technology development effort. The winning contractor has organized a National Team of industry experts to achieve the most innovative and

cost-effective solutions for development of the DD(X) through spiral development of technologies and engineering, with promising systems being employed on existing platforms and other future ship classes. DD(X) will dramatically improve naval surface fire support capabilities. Planned technologies, such as integrated power system and total ship computing environment in an open architecture, will provide more affordable future ship classes in terms of both construction and operation. In a noteworthy partnership with industry, the Navy shifted the DD(X) volume search radar to S-band, providing increased capability and the future potential to support missile defense operations.

SSGN

The FY 2005 Budget requests \$517 million of procurement funding for the conversion of the third OHIO Class submarine, and the Engineered Refueling Overhaul of the fourth and final submarine to be converted to SSGN. When completed, these submarines will provide transformational warfighting capability carrying up to 154 Tomahawk cruise missiles and support deployed special operating forces. The four SSGN conversions will be executed utilizing a public-private partnership conducting the work in Naval Shipyards, and are scheduled for delivery in FY 2007.

SEA BASE

CVN 21 Class

The CVN 21 program is designing the aircraft carrier for the 21st Century, as the replacement for the NIMITZ Class nuclear aircraft carriers. CVN 21 will be the centerpiece of tomorrow's Carrier Strike Groups and a contribution to every capability pillar envisioned in Sea Power 21. CVN 21 will be a primary force in Sea Strike with enhancements such as a future air wing which will include the Joint Strike Fighter and Joint Unmanned Combat Air Systems. CVN 21's transformational command centers will combine the power of FORCEnet and a flexible open system architecture to support multiple simultaneous missions, including integrated strike planning, joint/coalition operations and Special Warfare missions. The CVN 21 based strike group will play a major role in Sea Shield protecting United States interests, while deterring enemies and reassuring allies. CVN 21 will provide the United States the capability to quickly project combat power anywhere in the world, independent of land based support.

Overall, CVN 21 will increase sortie generation rate by nearly 20 percent, increase survivability to better handle future threats and have depot maintenance requirements that could support an increase of up to 25 percent in operational availability. The new design nuclear propulsion plant and improved electric plant together provide three times the electrical generation capacity of a NIMITZ Class carrier. This capacity allows the introduction of new systems such as Electromagnetic Aircraft Launching System, Advanced Arresting Gear, and a new integrated warfare system that will leverage advances in open systems architecture to be affordably upgraded. Other features include an enhanced flight deck, improved weapons handling and aircraft servicing efficiency, and a flexible island arrangement allowing for future technology insertion. The FY 2005 Budget request includes \$626 million for continued development of CVN 21. The Construction Preparation Contract, planned for 3rd quarter FY

2004, will be for design, advance planning, advance construction, non-nuclear advance procurement, and continuation of research studies to further reduce CVN 21 manpower requirements and total ownership costs. The construction contract is scheduled for award in 1st quarter FY 2007, with ship delivery in 2014. The program is currently working toward a Milestone B review in 3rd quarter FY 2004.

NIMITZ Class

Refueling and Complex Overhauls (RCOH) provide a bridge between maintaining current readiness requirements and preparing the platform for future readiness initiatives in support of Sea Power 21 by leveraging developing technologies from other programs and platforms that support RCOH planning and production schedules for advantageous insertion during this major recapitalization effort.

The Navy negotiated a modification to the RCOH contract for USS DWIGHT D. EISENHOWER (CVN 69) in December 2003. The renegotiated contract provides incentives for Northrop Grumman Newport News (NGNN) and the Navy team to work together to manage the completion of this complex availability. The Navy and NGNN created a better incentive contract structure to contain cost risk and maintain schedule. It is expected that this improved acquisition model will be used in future contracts for aircraft carrier construction and overhaul. USS DWIGHT D. EISENHOWER overhaul is scheduled to complete by November 2004.

The USS CARL VINSON (CVN 70) RCOH start was delayed one year to November 2005. USS CARL VINSON will remain available for operations until Summer 2005. This added availability enables the Navy to maintain a flexible defense posture and at the same time bring increased capability to project credible, persistent Naval combat power globally. Other advantages for the move included maintaining a balanced and stabilized industrial base for Navy ship maintenance in both public and private yards and providing additional near-term funding for ongoing recapitalization efforts. The FY 2005 Budget request includes \$333 million in advance procurement funding for the USS CARL VINSON overhaul.

Lastly, the Navy commissioned USS RONALD REAGAN (CVN 76) in July 2003, and laid the keel for GEORGE H. W. BUSH (CVN 77) in September 2003.

MPF(F)

Most prominent in highlighting the value and power of the nation's naval expeditionary capability was the Marine Corps' participation in Operation IRAQI FREEDOM. Success in this operation was due to our naval dominance, our expeditionary nature, and our flexibility and adaptability to defeat the challenges posed by enemy threats. Among other naval assets, eleven strategically located Maritime Prepositioning Force (MPF) ships were unloaded in 16 days to provide the equipment and sustainment required for two Marine Expeditionary Brigades. Exploiting the operational speed, reach, and inherent flexibility of seapower, the Navy-Marine Corps team achieved a rapid buildup of sustained warfighting power that was combat ready to support US Central Command.

We continue to revolutionize this invaluable capability. We are currently in the process of analyzing potential platform replacements. The Analysis of Alternatives for MPF(F) is complete. Current guidance requires MPF(F) to provide the combatant commander highly flexible operational and logistics support for missions projecting power ashore from a sea base, or during independent operations. Unlike current pre-positioning ships, MPF(F) will greatly improve our forces' flexibility by allowing operations that are fully interoperable with Naval and joint forces. MPF(F) represents the link between forward deployed forces and their reach-back bases both in CONUS and overseas, and will be a crucial element to Enhanced Networked Seabasing both for Naval and joint forces. Unlike any other prepositioning ship, the MPF(F) will not be reliant on a port facility, greatly reducing our dependence on international support. The ability to rapidly close and employ a large force dramatically increase the flexibility and utility of the seabased force and present the Combatant Commander with more response options than ever before. A formal report of the results is expected in Spring 2004.

Landing Craft Air Cushion (LCAC)

Our fleet LCACs saw dramatically increased operational tempo supporting worldwide operations during the past year, underscoring the need for the LCAC Service Life Extension Program (SLEP). The program, designed to extend the service life of LCACs to 30 years, had several notable accomplishments during the past year: LCAC 25 delivered on time in November 2003, and LCAC 2 delivered on time in February 2004. We awarded a contract to Textron Marine and Land Systems New Orleans for the FY 2002 and 2003 SLEPs (six craft total) in December 2002 and all craft are currently on schedule. The award of the FY 2004 contract for four craft occurred in March 2004. The FY 2005 Budget request includes \$90 million for SLEP of five craft. We are continuing with our revised acquisition strategy to refurbish vice replace the buoyancy boxes and will competitively select the FY 2005 SLEP work. The revised acquisition strategy will deliver the required LCAC capability and service life while providing a cost savings of \$104 million through the FYDP for the program.

LPD 17

The SAN ANTONIO (LPD 17) Class of amphibious transport dock ships represents a critical element of the Navy and Marine Corps future in expeditionary warfare. The FY 2005 Budget request includes \$966 million to fully fund the construction of the seventh ship. Four additional LPD 17s are included in the Future Years Defense Program (FYDP), with the final ship of the 12-ship Class planned beyond the FYDP. The FY 2005 Budget request reflects rephasing of one ship from FY 2006 to FY 2005 that will result in a more efficient workload profile as well as a total FYDP savings of approximately \$40M. Lead ship detail design is complete, lead ship fabrication is approximately 85% complete, and the lead ship was launched and christened in July 2003. Current efforts are focused on managing schedule and cost. LPD 18 construction began in February 2002. LPD 19/20 construction commenced in July 2001 and October 2002, respectively. We awarded the contract for LPD 21 in November 2003, named NEW YORK to honor the victims of the World Trade Center attack, and plan to award the contract for LPD 22 in 3Q FY 2004.

LHD 8

In accordance with Congressional direction to incrementally fund LHD 8, the FY 2005 Budget requests \$236M for continued construction. LHD 8 will be the first big deck amphibious ship that will be powered by gas turbine propulsion, and all of its auxiliary systems will rely on electrical power rather than steam. This change is expected to realize significant lifecycle cost savings. The ship, recently named MAKIN ISLAND, had its keel laying ceremony on February 14, 2004.

LHA(R)

The FY 2005 Budget requests \$44.2 million in R&D for LHA(R). LHA(R) concept designs are being evaluated within the context of Joint Seabasing and power projection. This ship will be the centerpiece of the Expeditionary Strike Group, a contributor to the Expeditionary Strike Force, and will carry expeditionary warfare through the middle of this century. The ship will leverage the future Sea Based environment and greatly enhance command and control capabilities and at sea training for embarked forces. The resulting design is planned to provide a transformational capability that is interoperable with future amphibious and Maritime Prepositioning Force ships, high-speed vessels, and advanced rotorcraft like the MV-22 and CH-53X, and the Joint Strike Fighter. This funding supports design development leading to a planned ship construction award in FY 2008.

Auxiliary Dry Cargo Ammunition Ship (T-AKE)

The FY 2005 Budget request includes \$768 million for the seventh and eighth ships. The first four ships have been authorized and appropriated and are under contract with NASSCO for construction. Exercise of the option for the fifth and sixth ships occurred in January 2004. Lead ship construction commenced in September 2003, with a projected delivery date of October 2005. The second ship is projected to deliver in FY 2006, while the third and fourth ship deliveries are projected for FY 2007.

Cobra Judy

The Navy successfully contracted with industry to develop and build a replacement for the aging Cobra Judy surveillance platform. Working in partnership with industry and leveraging Missile Defense Agency investments in radar technology, the Navy developed an innovative strategy which accelerated the acquisition of this essential capability while also creating the possibility to leverage the Cobra Judy program to create a competition for the radar for the Navy's future cruiser, CG(X).

RDT&E FUNDING OF LEAD SHIPS

In addition to greater planning and collaboration with our industrial partners, we must consider alternate methods of funding ship construction. The FY 2005 Budget requests funding to begin construction of the lead DDX and the lead LCS using RDT&E, N funds. This approach mirrors the one used in other weapons development programs. For example, tactical aircraft programs are developed using R&D funds to establish the production process and build multiple

pre-production aircraft. R&D funding allows the Department to establish a production process that can be efficient for the ship class, just as it is for the aircraft production run. Furthermore, we need the ability to adjust the lead ship budget in order to avoid the detrimental effects of prior year completion bills. Under the current process, we provide a program manager a block of money to carefully spend over 5-7 years, constructing a sophisticated new ship that has never been built before. The program manager, just as you or I, is likely very cautious about investing for the ship class, conserving their funds to make sure he or she can deliver the lead ship on budget and on schedule. We need to relieve this pressure and allow modest budget adjustments to be made to ensure the development of a successful construction process for the ship class. Steps such as these, endorsed by the Congress, were essential to programs like C-17, and reflect the procedure used in every other system development program.

COMPLETION OF PRIOR YEAR SHIPBUILDING CONTRACTS

I am pleased to report that the Navy experienced zero growth on ship construction contracts over the last year. The management actions instituted to address shipbuilding contract shortfalls have been effective. Elimination of the prior year shipbuilding budget line is within our grasp. We are continuously working to review the scope and cost of ships under construction to avoid new bills. We are also working diligently to set valid cost targets for new ships and combining this with contract terms and conditions that reward good performance. The Congress provided \$636 million in FY 2004 to address cost growth for ships contracted in 1999 and 2000. The FY 2005 Budget request reflects \$484 million to address similar shortfalls, resulting in a Prior Year Cost to Complete remaining balance of \$46 million dollars. However, we are still reviewing the projected completion cost for CVN-77, a ship that was budgeted and contracted for under previous procedures. To avoid future prior year completion bills, it is essential that ships be budgeted at targets which reflect the material and labor cost escalation experienced by U.S. industry.

SUMMARY

Our Naval forces are unique in their contribution to the Nation's defense. Versatile Naval expeditionary forces are the nation's first responders, relied upon to establish the tempo of action, control the early phases of hostilities, and set conditions for decisive resolution. America's ability to protect its homeland, assure our friends and allies, deter potential adversaries, and project decisive combat power depends on maritime superiority. The transformation of Naval forces is dedicated to greatly expanding the sovereign options available worldwide to the President across the full spectrum of warfare by exploiting one of our Nation's asymmetric advantages – control of the sea. The transformation of our Naval forces leverages enduring capabilities for projecting sustainable, immediately employable joint combat power by facilitating the accelerated deployment and flexible employment of additional joint capabilities through a family of systems and assets afloat. Our FY 2005 Shipbuilding Budget request seeks to accelerate our investment in Naval Power 21 to transform our force and its ability to operate as an effective component of the joint war fighting team. Congressional support of this shipbuilding plan is essential to achieving this vision – I thank you for your consideration.

NOT FOR PUBLICATION
UNTIL RELEASED BY
HOUSE ARMED SERVICES COMMITTEE

STATEMENT OF
RONALD O'ROURKE
SPECIALIST IN NATIONAL DEFENSE
CONGRESSIONAL RESEARCH SERVICE
BEFORE THE
HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON PROJECTION FORCES
HEARING ON NAVY FORCE STRUCTURE AND SHIP CONSTRUCTION
MARCH 30, 2004

NOT FOR PUBLICATION
UNTIL RELEASED BY
HOUSE ARMED SERVICES COMMITTEE

Mr. Chairman, distinguished members of the subcommittee, thank you for the opportunity to appear before you to discuss oversight issues relating to Navy force structure and ship construction. As requested, my testimony will focus on the following:

- the planned size and structure of the Navy (pages 1-4);
- the overall rate of Navy ship acquisition (pages 5-10);
- the DD(X) destroyer program (pages 10-26);
- the Littoral Combat Ship (LCS) program (pages 26-42);
- the Virginia (SSN-774) class submarine program (pages 42-48); and
- amphibious and MPF-type ship programs (page 49).

The Navy is seeking funding in FY2005 to begin building the lead DD(X) and the lead LCS. The DD(X) and LCS programs, if implemented, would represent the most significant change in Navy surface combatant procurement in at least 20 years. These programs, if implemented, could significantly influence future Navy capabilities, funding requirements, and the shipbuilding industrial base. Consequently, much of this statement focuses on the DD(X) and LCS programs.

Planned Size and Structure of the Navy¹

No Current, Officially Approved, Consensus Plan. In discussing Navy ship acquisition programs, it is important to note at the outset that there is no current, officially approved, consensus plan for the future size and structure of the Navy.

Status of 310-Ship Plan From 2001 QDR Uncertain. In September 2001, as part of its final report on the 2001 Quadrennial Defense Review (QDR), the Department of Defense (DoD) approved a plan for a Navy about 310 battle force ships. This plan, which is essentially the same as the one approved in the 1997 QDR, includes 12 aircraft carriers, 116 surface combatants (cruisers, destroyers, and frigates), 55 nuclear-powered attack submarines (SSNs), and 36 amphibious ships organized into 12 amphibious ready groups (ARGs) with a combined capability to lift the assault echelons of 2.5 Marine Expeditionary Brigades (MEBs).² These are the four principal categories of combat ships that define the size and structure of the Navy. The 310-ship plan also includes additional mine warfare and support ships.

¹For additional discussion of this issue, see CRS Report RS20535, *Navy Ship Procurement Rate and the Planned Size of the Navy: Background and Issues for Congress*, by Ronald O'Rourke. Washington, 2004. (Updated periodically) 6 pp.

²A MEB is a Marine combined-arms force that includes roughly 15,000 Marines, their ground equipment, and a supporting air detachment.

In approving the 310-ship plan (and other U.S. military force-structure goals), the 2001 QDR report cautioned that as DoD's "transformation effort matures -- and as it produces significantly higher output of military value from each element of the force -- DoD will explore additional opportunities to restructure and reorganize the Armed Forces."³

Moreover, since that time, DoD has launched studies on undersea warfare and forcible entry options. These studies could affect, among the other things, the required number of attack submarines and the required number and kinds of amphibious ships. In launching these studies, DoD thus created uncertainty about two of the principal categories of ships that define the 310-ship plan.

Alternative Navy 375-Ship Proposal Not Officially Endorsed by OSD. Navy leaders since 2002 have spoken of an alternative plan for a 375-ship Navy. The primary difference between the 310-ship plan and the 375-ship plan is that the 375-ship plan includes several dozen smaller surface combatants, called Littoral Combat Ships (LCSs), that are not included in the 310-ship plan. The 375-ship plan includes 12 aircraft carriers, 55 SSNs, 4 converted Trident cruise-missile-carrying submarines (SSGNS), 160 surface combatants (including 104 cruisers, destroyers, frigates, and 56 LCSs), 37 amphibious ships, and additional mine warfare and support ships.

Although Navy leaders in speeches and testimony to Congress routinely refer to the 375-ship plan, the plan remains a Navy proposal rather than an official DoD goal. At a hearing before the House Armed Services Committee on February 5, 2003, Secretary of Defense Donald Rumsfeld, when asked about the 375-ship plan, explicitly declined to endorse it. At a March 10, 2004, hearing before the Defense subcommittee of the Senate Appropriations Committee, the Chief of Naval Operations (CNO) stated: "I want to say that the Secretary [of Defense] has allowed me to speak to that number [375]. It's not a number that has been sanctioned by the Department [of Defense]. It is the CNO's view."⁴

Resulting Uncertainty Over Planned Size and Structure of Fleet. In summary, DoD has taken steps that raise questions about key parts of the 310-ship plan, but has also declined to endorse the Navy's 375-ship plan -- or any other alternative plan for the future size and structure for the Navy. As a result, there is now some uncertainty regarding the planned size and structure of the Navy. Instances of uncertainty over the planned size and structure of the Navy occur from time to time; the last instance was during the first two years (1989-1990) of the former Bush Administration. The current uncertainty over the planned size and structure of the Navy affects the surface combatant force in particular, because surface combatants account for most of the difference between the 310- and 375-ship plans.

Analysis for 375-Ship Proposal. Although Navy officials routinely mention their proposed 375-ship plan, they have provided few details in public about the composition of this fleet, and little explanation of how they arrived at the 375-ship proposal. This has led some observers to speculate that Navy leaders may have chosen the 375-ship figure as an arbitrary starting point that reflected a general desire to have a fleet closer to 400 ships than to 300 ships, and then filled out the 375-ship force by simply taking the 310-ship fleet and adding the number of ships (mostly LCSs) that was

³U.S. Department of Defense. *[Report on] Quadrennial Defense Review*. Washington, 2001. (September 2001) p. 23.

⁴Source: Transcript of hearing provided by Federal Document Clearing House, Inc.

needed to reach 375.

Translating Capabilities-Based Plans Into Planned Size and Structure. When asked about the current uncertainty regarding the planned size and structure of the fleet, Navy and DoD officials sometimes make reference to the concept of capabilities-base planning, and have argued that numbers of ships and aircraft per se are not as important as the total amount of capability represented in the fleet.

As a tool for planning future military forces, capabilities-based planning offers certain potential advantages, particularly in a time of multiple and uncertain potential future threats to U.S. interests. It can be argued, however, that at any given time, it should be possible, given current and projected ship and aircraft designs, to translate the total collection of desired Navy capabilities into a force-structure plan for a certain number of Navy ships and aircraft of different types. DoD routinely translates desired capabilities into desired numbers of platforms on this basis. Those numbers may change over time as threats and technologies change, but DoD's recent shift to capabilities-based planning, it can be argued, does not serve as a reason to set aside permanently the question of the planned size and structure of the fleet.

Potential Implications of Uncertainty for Congressional Oversight. Although periods of uncertainty regarding the planned size and structure of the Navy occur from time to time, if these periods persist for an extended period of time, they can have potential significant implications for Congress' ability to conduct oversight of Navy budgets and programs.

Three key potential oversight questions for Congress in examining the Navy's budgets and programs are the following:

- Has the Navy accurately identified, through capabilities-based planning, the kinds of capabilities it requires now and in the future?
- If so, would the Navy's planned force structure provide a Navy with these capabilities?
- If so, would the Navy's proposed procurement programs support a Navy with this force structure, and does the Navy's budget present a credible plan for adequately funding these procurement programs?

By examining these three oversight questions, Congress can, at the broadest level, reconcile stated Navy capability goals with required force structure, and required force structure with specific programs and available funding.

If, however, there is no current, officially approved, consensus plan for the size and structure of the Navy, the middle element in this chain of three questions is missing, and Congress may find it difficult, if not impossible, to "close the oversight loop" by reconciling desired capabilities with planned force structure and proposed programs and budgets.

DoD and Navy officials may find the current uncertainty over the planned size and structure of the Navy convenient for managing any latent differences they may have over the planned size and structure of the Navy. The Navy, for example, may desire a fleet of about 375 ships, while DoD may

support a fleet of 310 (or less than 300) ships. If so, uncertainty over the planned size and structure of the Navy may permit DoD and the Navy to continue to debate this issue without exposing their differences to others.

It is also possible, however, DoD and Navy officials may find the current uncertainty over the planned size and structure of the Navy useful for the maneuvering room it provides in responding to congressional oversight questions. In the absence of a current, officially approved, consensus plan for the size and structure of the Navy, Navy and DoD officials are free to speak broadly about individual programs, and offer vague or changing total planned procurement quantities for various programs, without having to show Congress that it has a credible plan for funding these programs in certain total quantities within a certain total amount of available funding. This situation can make it significantly more difficult for Congress to carry out basic oversight functions in its review of Navy budgets and programs.

Potential Oversight Questions for Congress. Potential oversight questions for Congress regarding the planned size and structure of the Navy include the following:

- Are DoD and the Navy exploiting the current uncertainty over the planned size and structure of the Navy as an opportunity for responding to congressional questions about Navy plans and programs with vague or changing answers?
- What formal analysis of future Navy mission requirements did the Navy perform in arriving at its proposal for a fleet of 375 ships?
- If DoD does not support the Navy's proposed 375-ship plan, then why has DoD permitted Navy officials to continue speaking about it? Does DoD permit this because the 375-ship plan, unlike the 310-ship plan, creates a force-structure justification for proceeding with the Navy's Littoral Combat Ship program – a program which DoD does support?
- If DoD is moving away from the 2001 QDR's 310-ship plan and does not support the Navy's proposed 375-ship plan, then what plan does DoD support? Does DoD still support maintaining a Navy of at least 300 battle force ships?
- How might DoD's studies on undersea warfare requirements and forcible entry options affect the 310-ship plan's requirements for attack submarines and amphibious ships?
- When does DoD plan to clarify the current uncertainty regarding the planned size and structure of the Navy? Is DoD deferring this issue until next year in part because it prefers to avoid announcing potentially controversial decisions on this issue during an election year?

Overall Rate of Navy Ship Acquisition⁵

Number of Ships in FY2005 Budget. Navy officials, in defending their proposed FY2005 budget, have drawn attention to how the budget, in their view, includes the acquisition of 9 new ships, an increase of 2 ships from the 7 acquired under the FY2004 budget.

The 9-ship total, however, includes the lead LCS, whose acquisition cost of \$215.5 million is split evenly between FY2005 and FY2006, and the lead DD(X), for which the FY2005 budget provides only the first \$221 million, or about 8%, of an estimated total design and construction cost of \$2.8 billion.⁶ The remaining 92% of the cost of the lead DD(X) is to be provided during the period FY2006-FY2011.

On this basis, it might be more accurate to say that the FY2005 budget funds the acquisition of a total of perhaps 7.58 ships – 7 ships whose acquisition is fully funded, plus 50% of the relatively inexpensive lead LCS, plus 8% of the more expensive lead DD(X).

Funding For Ship Acquisition in FY2005 Budget vs. July-2000 Level. The CNO has testified this year on at least 4 occasions that when he assumed office in July 2000, the Navy's shipbuilding budget, known as the SCN account, was \$4.7 billion, and that this year, it is \$11.1 billion.⁷ One implication that can be drawn from this testimony is that the amount of funding

⁵For additional discussion of this issue, see CRS Report RS20535, *Navy Ship Procurement Rate and the Planned Size of the Navy: Background and Issues for Congress*, op cit.

⁶The total estimated cost of the FY2005 DD(X) is \$2.8 billion, including about \$1.8 billion in construction costs and \$1 billion in detailed design/nonrecurring engineering (DD/NRE) costs for the class. (In past Navy shipbuilding programs, DD/NRE costs have been attached to, and included in, the total procurement cost of the lead ship.) The Navy's proposed FY2005 budget requests \$103 million in construction funding and \$118 million in DD/NRE funding for the ship. The total of \$221 million is about 7.9% of \$2.8 billion. If the calculation is instead made on the basis of construction funding only, the \$103 million in construction funding would equate to about 5.7% of the ship's total construction cost.

⁷For example, at a March 17, 2004, hearing on the Department of the Navy FY2005 budget before the Defense subcommittee of the House Appropriations Committee, the CNO testified:

Fundamentally, Chairman Young, when I came up here the first year and when I took over as the CNO, my SCN investment for that year was \$4.7 billion, and I'd been talking to you for four years about trying to get to \$12 billion, and this year it's 11.1

At a March 10, 2004, hearing on the Department of the Navy FY2005 budget before the Defense subcommittee of the Senate Appropriations Committee, the CNO testified:

The year I got to this job -- and, Mr. Chairman, you indicated this is my fourth visit to see you all. The year I got here, the investment in shipbuilding was \$4.7 billion. The investment today is \$11.1 billion, and I've been shooting to get toward a goal of \$12 billion a year.

At a February 12, 2004, hearing before the House Armed Services Committee, the CNO testified:

When I got this job, my shipbuilding SCN number was \$4.7 billion, and that was not the dark ages. This is my fourth visit. So in 2000, it was \$4.7 billion. In the whole decade of the 1990s,

(continued...)

available for Navy ship acquisition has more than doubled since July 2000.

The figure of \$11.1 billion appears accurate as the currently requested amount for FY2005, if one includes funding requested for ship acquisition not only in the SCN account, but in the Navy's research and development account (RDTEN) and the National Defense Sealift Fund (NDSF). As shown in the table below, the total amount of requested ship-acquisition funding in FY2005 in these three accounts is about \$11.1 billion.

The statement about the shipbuilding account being \$4.7 billion in July 2000, however, is more puzzling. In July 2000, the Navy was executing the FY2000 budget, and the Navy had submitted its proposed FY2001 budget to Congress. As shown in the table below, the amount requested for the SCN account for FY2000 was about \$6.7 billion, the amount provided for the SCN account for FY2000 (with post-enactment adjustments) was about \$7.1 billion (or about \$7.5, if funding in the NDSF is added in), and the amount requested for the SCN account for FY2001 was about \$12.3 billion.

These figures are all much higher than \$4.7 billion. Indeed, the requested figure for FY2001 is higher than the \$11.1 billion requested for FY2005. And none of the other SCN figures on the table approach \$4.7 billion – they are all above \$8 billion.

Rather than a pattern of growth from \$4.7 in FY2000 or FY2001 to \$11.1 billion in FY2005, what the figures in the table show is that shipbuilding increased substantially from FY2000 to FY2001, declined somewhat in FY2002 and FY2003, and then increased in FY2004 and FY2005 back to something close to the FY2001 level. The suggestion from the numbers is that the shipbuilding account, rather than growing steadily since FY2000 or FY2001, has shown no clear trend of increase or decrease since FY2001.

⁷(...continued)

the numbers ranged in the sixes on average, and I testified earlier that we needed to be reaching toward \$12 billion. We are in total SCN this year at \$11.1 billion.

At a February 10, 2004, hearing before the Senate Armed Services Committee, the CNO testified:

As a point of reference, the year that I arrived in this post, the (SCN?) account, ship-building account for the Navy was \$4.7 billion. We invest this year a little over \$11 billion in new construction and in modernization of our force.

(Sources for quotes: transcripts of hearings provided by Federal News Service, Inc., and Federal Document Clearing House, Inc. Parenthetical notation with question mark in the final quote is as it appears in the transcript.)

Table 1. Funding for Navy Ship Acquisition, Requested and Provided, FY2000-FY2005
(millions of then-year dollars)

	FY00		FY01		FY02		FY03		FY04		FY05
	Req.	Prov.	Req.	Prov.	Req.	Prov.	Req.	Prov.	Req.	Prov.	Req.
SCN	6,679	7,125	12,297	11,965	9,344	9,278	8,191	9,108	11,439	11,402	9,962
RD TEN	0	0	0	0	0	0	0	0	0	0	329*
NDSF	0	359	0	128	0	361	389	310	722	722	768
Total	6,679	7,484	12,297	12,093	9,344	9,639	8,580	9,418	12,161	12,124	11,059

Source: Annual Navy budget highlight books for FY2000-FY2005. NDSF figures are funding in NDSF for "Sealift Acquisition" or "Strategic Sealift Acquisition."

* Includes \$108 million for lead LCS and \$221 million for lead DD(X).

Rate of Ship Procurement Relative to Size of Navy. The rate of Navy ship procurement and its relationship to the planned size of the Navy has been a concern in Congress since the mid-1990s. Some Members of Congress – particularly those on the defense-oversight committees – have repeatedly expressed concern over what they view as a divergence between the required size of the Navy and the planned rate of Navy ship procurement. CRS has previously examined the issue in a 1996 report,⁸ in another report maintained since 1997,⁹ and in 1997, 1999, 2000, and 2002 testimony to Congress. The conference report (H.Rept. 107-772 of November 12, 2002) on the FY2003 defense authorization act (P.L. 107-314/H.R. 4546) strongly criticized the Navy for submitting shipbuilding plans in recent years with average rates of ship procurement that would not support the planned size of the Navy over the long run (see pages 448-451).

The Administration's proposed FY2005 defense budget and amended FY2004-FY2009 Future Years Defense Plan (FYDP) calls for procuring 9 new Navy battle force ships in FY2005 and a total of 44 new Navy battle force ships in FY2005-FY2009, or an average of 8.8 new battle force ships per year. Fourteen of the 44 ships would be procured in FY2009. For the 4-year period FY2004-FY2008, the plan would procure 30 new battle force ships, or an average of 7.5 per year.¹⁰

The average rate of Navy ship procurement that would need to be achieved over the long run to maintain a Navy of a certain planned size over the long run is called the steady-state replacement rate. This rate is equal to the planned force size divided by the average service life of a Navy ship. Navy plans assume an average 35-year life for Navy ships. Using this figure, the steady-state replacement rate would be about 8.9 new ships per year for a 310-ship fleet, and about 10.7 new

⁸CRS Report 96-785 F, *Navy Major Shipbuilding Programs and Shipbuilders: Issues and Options for Congress*, by Ronald O'Rourke. Washington, 1996. (September 24, 1996) 126 pp.

⁹CRS Report RS20535, *Navy Ship Procurement Rate and the Planned Size of the Navy: Background and Issues for Congress*, by Ronald O'Rourke. Washington, 2004. (Updated periodically) 6 pp.

¹⁰The plan also includes 1 Maritime Prepositioning Force (Future) (MPF(F)) ship in FY2007, 2 more in FY2009, and 1 MPF(Aviation) (MPF(A)) ship in FY2009. MPF-type ships traditionally have not been classified as battle force ships and consequently have not counted toward the goal of a fleet of 310 or 375 battle force ships.

ships per year for a 375-ship fleet. These are average rates that would need to be achieved over a 35-year period.

The table below shows past and projected rates of Navy ship procurement. As can be seen in the table, the rate of Navy ship procurement has been below the steady-state replacement rate for a 310-ship fleet since FY1993, and is programmed to remain below that rate through FY2008.

Table 2. Battle force ships procured or proposed, FY1982-FY2009

82	83	84	85	86	87	88	89	90	91	92	93	94	95
17	14	16	19	20	17	15	19	15	11	11	7	4	4
96	97	98	99	00	01	02	03	04	05	06	07	08	09
5	4	5	5	6	6	6	5	7	9	6	7	8	14

Source: CRS compilation based on examination of defense authorization and appropriation committee and conference reports for each fiscal year. The table excludes non-battle force ships that do not count toward the 310- or 375- ship goal, such as sealift and prepositioning ships operated by the Military Sealift Command and oceanographic ships operated by agencies such as the National Oceanic and Atmospheric Administration (NOAA).

The rate of Navy ship procurement funded since FY1993 has created a backlog of deferred Navy ship procurement relative to the steady-state replacement rate. As a result of this backlog, maintaining a 310-ship fleet or building up to a 375-ship fleet will require a rate of Navy ship procurement in future years that is higher than what steady-state replacement rates would normally suggest. If the amended FY2004-FY2009 FYDP is implemented, then maintaining a 310-ship fleet could require a Navy ship procurement rate after FY2009 of about 11.2 ships per year, while building up to a 375-ship fleet could require a rate of about 14.8 ships per year.¹¹

¹¹As shown in Table 2, during the 12-year period FY1993-FY2004, a total of 64 new battle force ships were procured, or an average of about 5.3 ships per year. If the amended FY2004-FY2009 FYDP were implemented, another 44 new battle force ships would be procured through FY2009, bringing the total for the 17-year period FY1993-FY2009 to 108 new battle force ships, or an average of about 6.4 new ships per year. Procuring ships at steady-state replacement rates of about 8.9 ships per year (for a 310-ship fleet) or 10.7 ships per year (for a 375-ship fleet) for these 17 years would result in a total procurement of about 151 or 182 ships, respectively. Procuring an average of 8.8 new ships per year during the period FY2005-FY2009 would thus result in a cumulative 17-year ship-procurement backlog since FY1993 of about 43 ships (for a 310-ship fleet) or about 74 ships (for a 375-ship fleet) relative to the steady-state ship-procurement requirement (151 or 182 ships minus 108 ships, respectively). This potential "deficit" in ship procurement would not be immediately apparent because of the relatively large numbers of ships built in the 1970s and 1980s, when the ship-procurement rate was well above 8.9 ships per year. After 2010, and particularly after 2020, however, when the 1970s- and 1980s-era ships begin to retire, this potential backlog, if not by then redressed, would become apparent, and the size of the fleet would fall well short of 310 or 375 ships.

Eliminating this potential backlog over the remaining 18 years in a 35-year ship procurement period beginning in FY1993 would require increasing procurement rate after FY2009 to 11.2 ships per year for a 310-ship fleet or 14.8 ships per year for a 375-ship fleet. For a 310-ship fleet, if an average procurement rate of about 8.9 ships per year were to be achieved for the entire 35-year period FY1993-FY2027 (that is, if a total of 310 ships are to be procured in this period), then a total of 204 ships (310 minus the 106 procured through FY2009) would need to be procured for the 18-year period FY2010-FY2027, or an average of 11.3

(continued...)

Some observers consider the average 35-year service life figure for Navy ships optimistic. If the figure turns out to be 30 years, as some observers believe, then for a 310-ship fleet, the steady-state replacement rate would be about 10.3 ships per year, and the procurement rate needed after FY2009 could be about 15.5 ships per year. For a 375-ship fleet, the steady-state replacement rate would be about 12.5 ships per year, and the procurement rate needed after FY2009 could be about 20.5 ships per year.¹²

Potential Oversight Questions for Congress. Potential oversight questions for Congress regarding the overall rate of Navy ship acquisition include the following:

- Given that one of the 9 ships that Navy officials speak of as being in the FY2005 budget request (the lead LCS) has only the first half of its cost provided for in FY2005, while another (the lead DD(X)) has only the first 8% of its cost provided for in FY2005, how accurate is it to say that the FY2005 budget acquires 9 ships?
- Why does the Navy depict the SCN budget in mid-2000 as being about \$4.7 billion when the budget at this time was either \$6.7 billion (the FY2000 requested figure), more than \$7 billion (the FY2000 enacted figure), or \$12.3 billion (the FY2001 requested figure)?
- Given the apparent difficulties that the Navy has experienced in recent years in finding resources to procure more than about 6 battle force ships per year while meeting other funding demands, and the Navy's plan to procure an average of 7.5 battle force ships per year during the period FY2005-FY2008, will the Navy be able to increase the rate of Navy ship procurement to 11 or more battle force ships in FY2009 and beyond? How much of a role will the relatively inexpensive Littoral Combat Ship (LCS) play in increasing the number of ships that can be procured each year for a given amount of ship-procurement funding?
- Does DoD's budget-planning process place adequate emphasis on Navy ship procurement relative to other DoD funding priorities? Does DoD's plan to procure 7.5 battle force ships per year in FY2004-FY2008 reflect a potential DoD intent to reduce the planned size of the Navy to less than 300 ships?
- Is DoD committed to restoring the Navy to a force of more than 300 battle force

¹¹(...continued)

new ships per year. For a 375-ship fleet, if an average procurement rate of about 10.7 ships per year were to be achieved for the entire 35-year period FY1993-FY2027, then a total of 269 ships (375 minus the 106 procured through FY2009) would need to be procured for the 18-year period FY2010-FY2027, or an average of 14.9 new ships per year. The post-FY2009 rates of 11.3 or 14.9 new ships per year can be called the post-FY2009 catch-up rates for 310- and 375-ship fleets, respectively, because they would gradually work off the backlog of deferred ship procurement that has accumulated since FY1993 and thereby catch up with the total number of procured ships that would result from maintaining procurement at the steady-state rate.

¹²For a 310-ship fleet, the FY1993-FY2009 backlog of deferred procurement would be about 68 ships, and the average required rate for FY2010-FY2022 – the final 13 years in a 30-year building period beginning in FY1993 – would be about 15.5 ships per year. For a 375-ship fleet, the FY1993-FY2009 backlog would be about 105 ships, and the average required rate for FY2010-FY2022 would be about 20.5 ships per year.

ships by the end of FY2009, or does DoD intend to use the planned below-300 period of FY2004-FY2007 to acclimate Congress to the idea of permanently reducing the Navy to less than 300 battle force ships?

DD(X) Program¹³

This section summarizes cost and funding figures for the DD(X) program, and then discusses the following oversight issues relating to the program:

- DD(X) procurement cost and program affordability,
- the DD(X)'s naval surface fire support (NSFS) mission,
- technology risk in the DD(X) program,
- the Navy's proposed strategy for funding the lead DD(X), and
- the surface combatant industrial base.

Summary of Program Cost and Funding. The Navy estimates that the first DD(X) will cost about \$2.8 billion to design and build, including about \$1.8 billion in hands-on construction costs for the ship and about \$1 billion in detailed design and nonrecurring engineering costs (DD/NRE) for the class. (The DD/NRE costs for each new class of Navy ships have traditionally been included in the procurement cost of the lead ship of the class.) The Navy plans to fund the first DD(X) through the Navy's research and development account rather than the Navy's ship-procurement account, where Navy combat ships traditionally have been procured.

The Navy estimates that the fifth and sixth DD(X)s will have an average unit procurement cost of \$1.2 billion to \$1.4 billion in FY2002 dollars. The Congressional Budget Office (CBO) estimates that a class of 24 DD(X)s built at a rate of 2 per year would have an average unit procurement cost of \$1.8 billion in FY2003 dollars.

As shown in table 3 below, the Navy's estimated procurement cost equates to a cost per thousand tons (CPTT) of light-ship displacement (i.e., the empty weight of the ship without fuel) that is 36% to 45% less than that of today's DDG-51 destroyers, while CBO's estimate equates to a CPTT that is 18% less. If the DD(X) CPTT is set equal to that of the DDG-51, the DD(X) would cost more than \$2 billion.

¹³For additional discussion of the DD(X) program, see CRS Report 21059, *Navy DD(X) Destroyer Program: Background and Issues for Congress*, by Ronald O'Rourke. Washington, 2004. (Updated periodically) 6 pp.; and CRS Report RL32109, *Navy DD(X) and LCS Ship Acquisition Programs: Oversight Issues and Options for Congress*, by Ronald O'Rourke. Washington, 2004. (Updated periodically) 95 pp.

Table 3. Cost Per Thousand Tons (CPTT)

Ship	Cost (when procured at 2 per year)	Full load displacement (tons)	Light-ship displacement (tons)	CPTT	DD(X) CPTT compared to DDG-51
DDG-51	\$1.25 bil.	~9,000	6,950	~\$180 mil.	—
Estimates for DD(X)					
Navy	\$1.2-1.4 bil.	~14,000	12,135	\$99-115 mil.	-36% to -45%
CBO	\$1.8 bil.	~14,000	12,135	\$148 mil.	-18%
CPTT = DDG-51	\$2.18 bil.	~14,000	12,135	\$180 mil.	equal

Including more than \$8.5 billion in program research and development costs, the total acquisition (i.e., development plus procurement) cost for a class of 24 DD(X)s would range from about \$39 billion-\$44 billion (using the Navy's estimated cost for follow-on DD[X]s) to about \$53 billion (using CBO's estimate) to more than \$60 billion (if follow-on DD[X]s cost more than \$2 billion each).

Table 4 below shows funding for the DD(X) program through FY2009.

Table 4. Funding For DD(X) Program, FY2002-FY2009
(millions of then-year dollars)

	02	03	04	05	06	07	08	09	Total thru FY09
Research, Development, Test & Evaluation, Navy (RDTE) account									
Ship 1 construction	—	—	—	103	288	294	353	269	1307*
DD/NRE	—	—	—	118	349	252	127	87	933*
All other**	490	895	1059	1230	1097	791	439	259	6260*
Total RDTE***	490	895	1059	1451	1734	1337	919	615	8500*
Shipbuilding and Conversion, Navy (SCN) account									
Ship 2	—	—	—	—	49	2004	—	—	2053
Ship 3	—	—	—	—	49	1493	—	—	1542
Ship 4	—	—	—	—	—	49	1729	—	1778
Ship 5	—	—	—	—	—	49	1494	—	1543
Ship 6	—	—	—	—	—	—	49	1695	1744
Ship 7	—	—	—	—	—	—	49	1478	1527
Ship 8	—	—	—	—	—	—	—	1523	1523
Total SCN	0	0	0	0	98	3595	3321	4696	11710
TOTAL	490	895	1059	1451	1832	4932	4240	5311	20210

Source: Navy data provided to CRS by Navy Office of Legislative Affairs, February 20, 2004.

* Additional funding required in FY2010-FY2011 to complete construction of lead ship, and in years after FY2009 for DD/NRE and all other RDT&E.

** Funding for all RDT&E for the DD(X) program other than DD/NRE.

*** Figures do not include research and development funding provided for the DD-21/DD(X) program prior to FY2002.

Procurement Cost and Program Affordability. One potential oversight issue for Congress for the DD(X) program concerns the potential procurement cost of follow-on DD(X)s and the resulting affordability of the DD(X) program. Some observers are concerned about the Navy's ability to build follow-on DD(X)s at a cost of \$1.2 billion to \$1.4 billion, for the following reasons:

- The Navy's estimated cost includes a \$200-million range of uncertainty, suggesting that the Navy does not have a complete understanding of potential costs for building the DD(X) design.
- CBO's estimate (\$1.8 billion) is 29% to 50% higher than the Navy's estimate, suggesting that there are major analytical differences between the Navy and CBO regarding the potential cost of the follow-on ships;
- Although the DD(X) contains producibility features not present in the DDG-51

design, the Navy has not explained in detail why it believes the DD(X) would be about 40% less expensive on a per-weight basis to build than the DDG-51.

- The Navy has experienced substantial cost growth in other recent Navy shipbuilding programs, such as the LPD-17 amphibious ship program and the Virginia-class submarine program.

Supporters of both the DD(X) and LCS are concerned that limits on Navy funding might compel the Navy to choose between the DD(X) and LCS, while supporters of the Virginia-class submarine program are concerned that the Navy may keep Virginia-class procurement at 1 ship per year (rather than increasing it at some point to 2 per year) so as to generate funding to pay for the DD(X) and LCS. If the procurement cost of follow-on DD(X)s is closer to \$2 billion than to \$1 billion, pressures for the Navy to make a choice between the DD(X), LCS, and Virginia-class programs could grow more intense.

As a potential means of reducing Navy surface combatant acquisition costs, the Congressional Budget Office (CBO), in a March 2003 report on surface combatants, outlined an alternative approach of terminating the DD(X) and LCS programs and instead procuring a large, new-design frigate. CBO estimated that such a ship, which it called the FFG(X), might displace about 6,000 tons, which would be at least twice as large as the LCS, but about two-thirds as large as the Navy's current 9,000-ton cruisers and destroyers. CBO estimated that a 6,000-ton FFG(X) might have a unit procurement cost of about \$700 million, which is almost three times the Navy's estimated procurement cost of an LCS with a representative modular payload package, but roughly half or a little more than half of the Navy's estimated procurement cost of a DD(X).¹⁴

A 6,000-ton FFG(X) would likely be too small to be equipped with the 155mm Advanced Gun System (AGS) and therefore likely could not provide the additional naval gunfire capability that would be provided by the DD(X). A 6,000-ton FFG(X) might, however, be capable of performing the non-gunfire missions that would be performed by both the DD(X) and the LCS. A 6,000-ton FFG(X) would effectively replace the Navy's FFG-7s and DD-963s in the surface combatant force structure. Since a 6,000-ton FFG(X) would be roughly midway in size between the 4,000-ton FFG-7 design and the 9,000-ton DD-963 design, it might be suitable for carrying more modern versions of the mission equipment currently carried by the FFG-7s and DD-963s.

Naval Surface Fire Support (NSFS) Mission. Another potential oversight issue for Congress regarding the DD(X) program is the ship's naval surface fire support (NSFS) mission. The size and cost of the DD(X) reflects in part the presence on the ship of the 2 AGSs, which in turn reflects a Navy desire to close a shortfall in NSFS capability that was created in the early 1990s when the Navy retired its reactivated Iowa-class battleships. Support for the DD(X) program can thus depend in part on views regarding whether additional NSFS is required, and whether the DD(X) represents a cost-effective means of providing it.

DD(X) supporters could argue that the requirement for additional NSFS capability has been periodically reviewed and revalidated in recent years. They could also argue that the geography of places like the Korean Peninsula, and the ability of Navy ships to remain on station for months at

¹⁴U.S. Congress. Congressional Budget Office. *Transforming the Navy's Surface Combatant Force*. Washington, 2003. (A CBO Study, March 2003) pp. 27-28, 63.

a time without interruption, are reasons for maintaining a robust Navy NSFS capability. Anything smaller than a 155mm gun, they could argue, would not be sufficient to close the gap in NSFS capability, and a ship the size of the DD(X) is needed to carry the 155mm AGS.

DD(X) skeptics can argue that NSFS did not play a major role in U.S. military operations in Kosovo, Afghanistan, and Iraq, and that Afghanistan and Iraq highlighted new concepts for ground operations using smaller-sized ground units supported by aircraft loitering overhead with relatively inexpensive, all-weather precision-guided munitions, raising questions about the priority of NSFS compared to other investments, or about the amount of NSFS capability that will be needed in the future. Even if additional NSFS capability is needed, they could argue, the DD(X) may not be a cost-effective way to provide it if its procurement cost turns out to be closer to \$2 billion than to \$1 billion.

One potential alternative approach to providing the Navy with additional NSFS capability in the form of AGSs would be to instead procure a low-cost gunfire support ship, which could be a relatively simple ship equipped with 1 or 2 AGSs and only such other equipment that is needed for basic ship operation. Other than the AGSs and perhaps some advanced technologies for reducing crew size and thus total life-cycle cost, such a ship could use existing rather than advanced technologies so as to minimize development time, development cost, and technical risk. Such a ship might be considerably smaller and less expensive to procure than the DD(X).

Of the number of such ships procured – either 24 or some smaller number – some fraction (a total of perhaps 4 to 8 ships) might be forward-stationed at sites such as Guam or Diego Garcia, so as to be available for rapid crewing and movement to potential contingencies in the Western Pacific or Indian Ocean/Persian Gulf regions. The goal would be to procure specialized AGS-armed ships as a niche capability for the Navy, and then forward-station some of that capability so as to maximize the odds of being able to bring a desired number of AGSs to an overseas theater of operation in a timely manner on those occasions when it is needed.

Technology Risk. A third potential oversight issue for Congress regarding the DD(X) program concerns technology risk in the program. The DD(X) is to include several significant new technologies, including a tumblehome hull form, an integrated electric-drive system, a total-ship computing environment, a dual band radar, a deckhouse with integrated radar apertures, a peripheral vertical launching system, the AGS, and technologies (including an autonomic fire-suppression system) permitting a reduced-size crew. Navy officials argue that in restructuring the previous DD-21 destroyer program into the current DD(X) program, a number of steps were taken to ensure that these technologies would be ready in time for a lead DD(X) procured in FY2005. These steps include the use of land-based engineering design models (EDMs) for verifying new technologies and increased levels of development funding.¹⁵

Skeptics are concerned that in spite of these steps, one or more critical technologies may not be ready for a lead DD(X) procured in FY2005. At a hearing on March 11, 2004, before this subcommittee on Navy acquisition programs, Chairman Bartlett stated that the General Accounting Office (GAO), in a newly completed report on defense acquisition programs, had concluded that “the DD(X) is scheduled to enter system development with none of its 12 critical technologies fully

¹⁵For additional discussion of steps taken by the Navy to mitigate technology risk in the DD(X) program, see CRS Report RL32109, *op cit*, pp. 50-52.

mature.” The Navy, when asked whether it concurred with GAO on this point, stated that it did not concur but that it would like to have more time to review the contents of the report.¹⁶

If one or more key technologies are not ready to support procurement of the lead DD(X) in FY2005, Congress may have three options:

- procure the lead ship in FY2005 with the understanding that it may be delivered to the Navy some time after the currently scheduled delivery date of 2011;
- procure the lead ship in FY2005 and build it with less-advanced substitute technologies (called fall-back options or technology off ramps); or
- delay procurement of the lead ship to FY2006 or a later year.

Skeptics are concerned that the second option could reduce the capabilities of the ship and require a partial redesign, which itself could cause delay in the program.

Supporters of the DD(X) program argue that the DD(X) needs to be procured because its new technologies represent the future of the surface fleet. In particular, they have stressed that the DD(X) is to form the basis of a spiral development effort leading to the future CG(X) cruiser. This argument is broadly consistent with the DoD’s new emphasis on evolutionary acquisition with spiral development (EA/SD).¹⁷

Missile defense is a high-interest mission for the Office of the Secretary of Defense (OSD), and is to be one of the CG(X)’s primary missions. NSFS, in contrast, is mentioned less frequently by OSD officials. Some observers consequently believe OSD’s interest in the CG(X) may be stronger than its interest in the DD(X).

Skeptics could argue that ships costing more than \$1 billion each, or perhaps something closer to \$2 billion each, should not be built unless and until they are needed to fulfill an important mission need, and can do so cost-effectively, at which point the new technologies can certainly be introduced into the fleet. If new ships are needed for mission reasons, they could argue, they should be built with new technologies; but it does not follow that simply because new technologies are available, there is a need to build new ships. At most, skeptics could argue, the argument about new technologies may justify building a single ship as a fully integrated at-sea technology demonstrator.

Potential oversight questions for Congress regarding technology risk in the DD(X) program include the following:

- What is the Navy’s view of GAO’s recent conclusions regarding the readiness of key DD(X) technologies?
- What are the Navy’s fall-back options for these key technologies?

¹⁶Source: Transcript of hearing provided by Federal Document Clearing House, Inc.

¹⁷For more on EA/SD, see CRS Report 21195, *Evolutionary Acquisition and Spiral Development in DOD Programs: Policy Issues for Congress*, by Gary J. Pagliano and Ronald O’Rourke. Washington, 2003. (Updated periodically) 6 pp.

- How would using these fall-back options affect the DD(X)'s capabilities?
- If using these fall-back technologies would reduce the DD(X)'s capabilities, would the DD(X) still be cost-effective?
- Would using any of these fall-back options require a partial redesign of the DD(X), and if so, what impact might this have on the schedule for procuring or building the lead DD(X)?
- Is the concept of spiral development being invoked in part with the aim of using the CG(X) – a more distant program that may be more strongly favored by OSD – to help leverage support for the nearer-term DD(X) program? If one decides that the CG(X) is worth pursuing, but that the DD(X) is not, is the concept of spiral development sufficient by itself to justify pursuing the DD(X)? If the DD(X) is not pursued, what would prevent the technologies now being developed for the DD(X) from instead being developed directly for the CG(X)?

Funding Strategy for Lead Ship. A fourth potential oversight issue for Congress regarding the DD(X) program concerns the Navy's proposal to fund the construction of the lead ship through the Navy's research and development account rather than through the SCN account, where lead ships traditionally have been funded.

Navy Arguments. Navy officials over time have made three arguments in favor of funding the lead DD(X) (and the lead LCS) in the Navy's research and development account rather than in the Navy's ship-procurement account, where lead ships traditionally have been funded:

- **New technologies.** Navy officials argue that this approach is consistent with the large number of new technologies to be incorporated into the ship. These technologies, the Navy argues, make each lead-ship construction effort somewhat like a research and development activity rather than a straight procurement. Funding the lead ships through the research and development account, the Navy argues, will permit the Navy to mitigate technical risk in the programs by permitting the ships' new technologies to be developed in a more R&D-like managerial environment. Funding adjustments that might be needed to respond to events that occur during the design and construction of the lead ship, they argue, would be easier to make in the research and development account rather than the ship-procurement account.
- **Cost discipline.** Navy officials argue that this approach will improve cost discipline in the program by compelling the Navy managers of the program to justify the funding for their program on a year-by-year basis. If the ship were funded in the Navy's ship-procurement account, the Navy argues, the entire cost of the ship would be funded up front, and the program managers would not be forced to confront cost-overrun issues until much later, at which point it could be much more difficult to find a way to complete the ships without asking for additional funding. Alternatively, Navy officials argue, program managers seeking to avoid a cost overrun might be averse to spending funds earlier in the design and construction effort in ways that might ultimately constrain construction costs.

- **Consistent with practice elsewhere.** Navy officials also argue that this approach will make ship acquisition more consistent with DoD practices for acquiring other kinds of systems, such as aircraft. In aircraft procurement programs, Navy officials argue, the initial aircraft are procured with research and development funding rather than procurement funding.¹⁸

Skeptics' Arguments. Skeptics of the Navy's plan to fund the lead DD(X) in the Navy's research and development account could argue the following:

- **New technologies.** The Navy's argument that the new technologies in the DD(X) make the lead ship somewhat like a research and development activity rather than a straight procurement is undercut by the Navy's argument that technology risk in the DD(X) program is being mitigated through land-based EDMs for verifying the new technologies and increased levels of development funding for the DD(X) program. If these steps will mitigate technology risk in the DD(X) program, skeptics could argue, then it should not be necessary to design and build the lead DD(X) in a research and development environment.
- **Cost discipline.** The Navy approach will weaken rather than strengthen cost discipline in designing and building the lead DD(X) by obscuring the total cost of the lead DD(X), by permitting the Navy to blend construction funding with traditional research and development funding in its budget documents, by making it easier for the Navy to adjust annual funding levels for the design and construction effort without necessarily attracting attention, and by permitting the Navy to finance cost overruns in the design and construction effort through the research and development account rather than through the ship-procurement account, where the

¹⁸For example, at a March 11, 2004, hearing before this subcommittee on Navy acquisition programs, John J. Young, Jr., the Assistant Secretary of the Navy (Research, Development and Acquisition) stated:

As we look to future procurement, the budget this year includes a request to R&D fund the lead ships in the DD(X) and LCS class. This request mirrors the approach used in every other weapons development program. Indeed, tactical aircraft programs are developed by using R&D funds to establish the production process which is critical and build multiple pre-production aircraft. These steps are equally important in shipbuilding to build a production process that can be efficient for the ship class, just as it is for aircraft.

Similarly, at a March 3, 2004, hearing before the Seapower subcommittee of the Senate Armed Services Committee, Secretary Young stated:

The next step beyond the existing programs is RDT&E funding of lead ships. We are working this alternate method of funding ship construction, and FY '05 budget request reflects funds to begin construction of the lead DDX and the lead Littoral Combat Ship, or LCS, using RDT&E funds. This approach mirrors the approach used in every other weapons development program. Indeed, tactical aircraft programs are developed using RDT&E funds to establish the production process and build multiple pre-production aircraft. These steps are important to establishing a production process that can be efficient for the ship class, just as it is for the aircraft production run.

(Source for quotes: Transcripts of hearings provided by Federal Document Clearing House, Inc.)

additional funding would be in the high-visibility line item entitled "Completion of Prior Year (PY) Shipbuilding." The Navy's approach, skeptics could argue, has already resulted in limited awareness that the total cost of the lead DD(X), including DD/NRE costs, is \$2.8 billion, and that the lead DD(X) is to be funded through a stream of annual funding increments stretching out to FY2011 – a period that includes two years (FY2010 and FY2011) that are beyond the FY2005-FY2009 FYDP and for which precise funding figures consequently are not available. Skeptics could argue that under the Navy's funding plan (see table 4), funding for construction of the lead DD(X) is not to be completed until FY2011, at which point DD(X)s numbers 2 through 10 will have been fully funded and the Navy will be seeking full funding for DD(X)s numbers 11 and 12 (assuming 2 DD(X)s are funded in FY2010 and another 2 are funded in FY2011). Funding the lead ship through a stream of annual payments, and blending construction funding with traditional research and development funding, they could argue, could weaken congressional oversight, which depends in significant part on making total ship construction costs clear and fully visible. The Navy's approach, they could argue, turns on its head the longstanding congressional view, dating to the 1950s and embodied in the full funding policy imposed on DoD by Congress at that time, that cost discipline in procurement is best achieved through up-front full funding of an item's procurement cost.¹⁹

- **Consistent with practice elsewhere.** Skeptics could argue that the Navy's argument about making ship acquisition consistent with acquisition practices for other kinds of systems, such as aircraft, is faulty, because the initial units in an aircraft program are often acquired as test articles rather than operational units, and because complex combatant ships require much more time to build than aircraft or other kinds of systems. In an aircraft acquisition program, they could argue, the first aircraft that are clearly intended for operational use are procured with procurement funding. Aircraft originally built as test articles, they could argue, are sometimes converted into operational aircraft, but this happens later. Aircraft can require 2 or 3 years to build, depending on aircraft type, while complex combatant ships require 5 to 7 years to build (the lead DD(X) is to enter service in 2011, 6 years after the start of construction funding). Consequently, in an aircraft acquisition program, the start of procurement of operational aircraft can be put off until the test articles are completed without adding too many years to the acquisition schedule. Attempting to do the same thing in a shipbuilding program, in contrast, would add many years to the acquisition schedule. There have been cases of aircraft acquisition programs where procurement of operational units began before all test articles were complete, but skeptics could argue that this practice adds technological risk to the program and should not be emulated in shipbuilding efforts.

A Potential Third Option. On the question of how to fund the lead DD(X), two options have been discussed – the traditional approach, under which the lead ship, including both the construction cost for the ship and the DD/NRE costs for the class, are fully funded through the ship-

¹⁹For more on the full funding policy, see CRS Report RL31404, *Defense Procurement: Full Funding Policy — Background, Issues, and Options for Congress*, by Ronald O'Rourke. Washington, 2002. (November 21, 2002) 41 pp.

procurement account in the year of procurement, and the Navy's proposed approach, under which both costs are funded through a stream of annual payments in the research and development account.

A third option, which has not been discussed, would be to fully fund the construction cost of the lead ship through the ship-procurement account while funding the DD/NRE costs for the class through the research and development account. This intermediate option would make the construction cost of the lead ship clear and visible, consistent with the logic of the full funding policy, while permitting the DD/NRE work – the work that might be most like research and development work, and potentially most subject to change and modification – to proceed in a more flexible research and development funding environment.

Potential Oversight Questions for Congress. Potential oversight questions for Congress regarding the Navy's proposal to fund the lead DD(X) through the research and development account include the following:

- In terms of promoting cost discipline in designing and building the lead DD(X) (or the lead ships of other ship classes), what are the relative merits of the traditional full funding approach and the Navy's proposed approach?
- In terms of supporting Congress' ability to conduct effective oversight of major defense acquisition programs, what are the relative merits of the traditional full funding method and the Navy's proposed approach?
- Is the Navy proposing to fund the lead DD(X) (and the lead ships of other ship classes) through the research and development account in part because it helps to obscure the cost of the lead ship and therefore make it easier for the Navy to secure congressional approval for the start of a ship-acquisition program?
- Compared to the traditional full funding approach and the Navy's proposed approach, what are the relative merits of the third, intermediate option of fully funding the construction cost of the lead ship while funding the DD/NRE costs for the class through the research and development account?

Industrial Base. A fifth potential oversight issue for Congress regarding the DD(X) program concerns the industrial base. The Navy's plan for shifting from procurement of DDG-51s to procurement of DD(X)s and LCSs raises at least two potential industrial-base issues for Congress. These issues concern the planned transition from DDG-51 procurement to DD(X)/LCS procurement, and the implications of building DD(X)s in one yard or two.

Transition From DDG-51s to DD(X)s and LCSs. Table 5 below shows the Administration's plans for procuring surface combatants during the FY2004-FY2009 Future Years Defense Plan (FYDP). As can be seen in the table, the plan calls for procuring a total of 2 surface combatants (both LCSs) in FY2006 and larger annual quantities before and after these dates.

**Table 5. Planned Surface Combatant Procurement,
FY2004-FY2009**

	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
DDG-51	3	3	0	0	0	0
DD(X)	0	1	0	2	2	3
LCS	0	1	2	1	3	6
Total	3	5	2	3	5	9

Supporters of the Navy's surface combatant industrial base, and particularly the two current surface combatant construction shipyards — General Dynamics/Bath Iron Works (GD/BIW) and Northrop Grumman/Ingalls (NOC/Ingalls) — are concerned that this plan will provide GD/BIW and NOC/Ingalls with insufficient work in FY2006, particularly since the 2 ships to be procured in FY2006 — both LCSs — will not be built at either of these yards.²⁰

If none of the LCSs shown in Table 5 are built at GD/BIW and NOC/Ingalls, which is possible, then a total of 14 surface combatants — 8 DD(X)s and 6 DDG-51s — would be available for GD/BIW and NOC/Ingalls under the Navy's plan during the period FY2004-FY2009. Based on their relative light-ship displacements of 12,135 and 6,950 tons, respectively, a single DD(X) might be the equivalent, in terms of shipyard work, to roughly 1.75 DDG-51s. If so, then the 8 DD(X)s shown in table might be the equivalent, in terms of shipyard work, to about 14 DDG-51s, and the total number of DDG-51 equivalents shown in Table 5 would be about 20 ships, or an average of about 3.3 ships per year. This is a bit more than the minimum of 3 DDG-51 equivalents per year that supporters of GD/BIW and NOC/Ingalls in past years have said is needed, along with a certain amount of other non-DDG-51 construction work at NOC/Ingalls, to maintain the financial health of both GD/BIW and NOC/Ingalls.

The ability of GD/BIW and NOC/Ingalls to weather periods of reduced Navy surface-combatant-construction work, moreover, may now be better than it was in the early 1990s, when the workload at the two yards first became a concern due to post-Cold War reductions in Navy ship procurement, because, unlike the earlier period, GD/BIW and NOC/Ingalls are now parts of larger defense firms — General Dynamics and Northrop Grumman, respectively — with significant financial resources. In addition, GD and NOC each own 3 shipyards involved in Navy shipbuilding, and at least in the case of NOC, there may be opportunities to bolster the workload at NOC/Ingalls with shipbuilding transferred from one of NOC's other yards (i.e., Avondale shipyards near New Orleans).

Even so, supporters of GD/BIW and NOC/Ingalls can argue that the plan in Table 5, if implemented, would put GD/BIW and NOC/Ingalls through a workload roller coaster (up in FY2005, down in FY2006, then up again in FY2007-FY2009) that could lead to production inefficiencies and increase shipbuilding costs. They could also question whether, in terms of

²⁰The Navy eliminated Northrop Grumman's industry team as a competitor for the LCS program in July 2003. Although General Dynamics' industry team remains a competitor for the LCS program, it anticipates building the first LCS at Austal USA, a team member's yard in Mobile, AL.

shipyard work, a DD(X) is the equivalent to 1.75 DDG-51s. Although that may seem to be the case based on the light-ship displacements of the ships, the Navy's estimated procurement cost of the DD(X) is fairly close to the cost of a DDG-51. If this estimate proves correct, they can argue, then the difference between the two ship designs in total shipyard work may not be as great as suggested by their differences in light-ship displacements.

Potential oversight questions for Congress include the following:

- What are the potential implications of the Navy's FY2005-FY2009 surface combatant procurement plan for total workloads, revenues, and employment levels at GD/BIW and NOC/Ingalls, particularly in FY2006?
- Would the Navy's plan to reduce surface combatant procurement during FY2006 and then increase it in subsequent years lead to any production inefficiencies? If so, what are the potential additional costs resulting from these inefficiencies?

Building DD(X)s in One Yard or Two. Although the Navy has stated that production contracts for the first 6 DD(X)s would be equally divided between GD/BIW and NOC/Ingalls, if affordability considerations lead to a decision to procure DD(X)s at a rate of less than 2 ships per year, or to procure a total of less than 24 DD(X)s, it is possible the Navy might consider switching to a single-yard production strategy. In large part to avoid the added costs of maintaining two production lines for a program to build a total of 12 San Antonio (LPD-17) class amphibious ships, the Navy in 2002 reached an agreement with GD and NOC to consolidate production of LPD-17s at NOC's Avondale and Ingalls yards rather than splitting the LPD-17s between NOC and GD, as previously planned. (In return for this, most of NOC's future DDG-51 production was shifted to GD/BIW.)

A Navy decision at some point to build DD(X)s at one yard rather than two could put the non-DD(X) yard under substantial financial pressure. This might particularly be the case for GD/BIW, since GD/BIW is almost entirely dependent on surface combatant construction. Building DDG-51s (and before that, CG-47-class cruisers) has been GD/BIW's principal business since the late 1980s. If DDG-51 procurement ends, DD(X)s are built solely at NOC/Ingalls, and LCSs are not built at GD/BIW, then GD/BIW could go out of business as a Navy shipbuilder following completion of its final DDG-51s around 2010 or 2011.

If GD wins the LCS competition, then one option for GD would be to transfer at least some of the LCS production work from Austal USA — the GD team's shipyard in Mobile, AL, where the GD team proposes to build the first LCS — to GD/BIW. Again, based on potential ship displacements, 3 LCSs per year might be roughly equivalent (in terms of shipyard work) to 1 DDG-51 per year, which is an amount of work that could be sufficient to maintain GD/BIW. Shifting production of some LCSs from Austal USA to GD/BIW, however, could increase LCS procurement costs due to higher shipyard overhead costs at GD/BIW and the potential additional costs of maintaining two LCS production lines at Austal USA and GD/BIW.

Ingalls is not solely dependent on construction of U.S. Navy surface combatants. It has been the nation's sole builder of Tarawa (LHA-1) and Wasp (LHD-1) large-deck amphibious assault ships, and is generally considered the leading contender for building any similar ships for the Navy in the future. In addition, it is currently performing a portion of the LPD-17 construction work that

is centered at Avondale, and could continue to do so. NOC/Ingalls is also to build new Coast Guard cutters under the Coast Guard's large Deepwater acquisition program. And, NOC/Ingalls has had some success in the past in winning work to build and modernize smaller surface combatants for foreign navies and to build commercial ships. How well all these other forms of work could compensate for the loss of DD(X) construction work, however, is not clear.

Potential oversight questions for Congress include the following:

- What are the potential relative costs of building DD(X)s in one yard or two? How might these potential relative costs be affected by changes in the planned DD(X) annual procurement rate and total number of DD(X)s to be procured?
- If the Navy at some point decides to build DD(X)s in one yard, what are the potential financial and employment implications for the non-DD(X) yard?

Options for the Industrial Base. There are at least three options that could be used in conjunction with the DD(X) and LCS programs for purposes of bolstering the surface combatant industrial base – procuring additional DDG-51s in FY2006, accelerating the procurement of amphibious assault ships, and accelerating and expanding procurement of Deepwater cutters for the Coast Guard.

Procure Additional DDG-51s in FY2006. This option, which would involve procuring 1 or 2 additional DDG-51s in FY2006, could be used to avoid the currently programmed procurement of no larger surface combatants in FY2006 shown earlier in table 5. Based on current procurement costs for DDG-51s, procuring 2 additional DDG-51s in FY2006 could require roughly \$2,500 million in additional funding.

Opponents of this option could argue that the Navy does not have an urgent operational need for any DDG-51s beyond those already planned for procurement, and that funding should not be spent to procure expensive Navy ships solely for the purpose of bolstering the industrial base. Supporters could argue that the additional cost of procuring these ships will be offset by avoiding the inefficiencies and resulting cost penalties on the DD(X) program of putting the industrial base through a roller coaster in FY2005-FY2007; that the uncertainty over the planned size and composition of the Navy suggests that the Navy might indeed have an operational need for additional DDG-51s; and that the Navy in any event would make good use of any additional DDG-51s that are procured. They might also argue that the Navy originally planned on procuring a total of about 57 DDG-51s, and that bolstering the defense industrial base consequently is already an important reason, if not the primary reason, for procuring most of the DDG-51s that the Navy plans to procure in FY2004 and FY2005.

Accelerate Procurement of Amphibious Assault Ships. This option would involve accelerating the procurement of 4 amphibious assault ships that the Navy currently envisions procuring in FY2008, FY2010, FY2013, and FY2016. These ships are intended as one-for-one replacements for 4 aging amphibious assault ships called LHA-2, LHA-3, LHA-4, and LHA-5.²¹

²¹ Amphibious assault ships, sometimes called “big deck” amphibious ships, are large amphibious ships with a flight deck that runs the length of the ship, as on an aircraft carrier. The Navy’s 12 amphibious assault (continued...)

The 4 aging LHAs have expected service lives of 35 years. Assuming a 5-year construction period, which would be consistent with the construction periods for recently built amphibious assault ships, the 4 replacement ships under the Navy's plan would enter service in 2013, 2015, 2018, and 2021, at which point LHA-2 through -5 would be 36, 37, 39, and 41 years old, respectively.

One option would be to accelerate the procurement of the first replacement ship to FY2007, and procure the other 3 ships at 2-year intervals — that is, in FY2009, FY2011, and FY2013. Again assuming 5-year construction periods, the 4 replacement ships under this option would enter service in 2012, 2014, 2016, and 2018, at which point LHA-2 through -5 would be 35, 36, 37, and 38 years old, respectively.

Another potential option would be to accelerate the procurement of the first replacement ship by two years, to FY2006, and then procure the other 3 ships at 2-year intervals — that is, in FY2008, FY2010, and FY2012. Under this option, the 4 replacement ships would enter service in 2011, 2013, 2015, and 2017, at which point LHA-2 through -5 would be 34, 35, 36, and 37 years old, respectively. It is not clear, however, whether the design for the first replacement ship could be made ready in time to support a procurement in FY2006; the issue could depend in part on the amount of design difference between the first replacement ship and LHD-8.

Given LHD-8's estimated procurement cost of \$2.0 billion,²² the 4 replacement ships would likely cost more than \$2 billion each to procure. Accelerating the procurement of the 4 replacement ships could reduce their cost somewhat compared to the Navy's current plan due to avoided inflation (i.e., the ships would be procured in earlier years) and reduced loss of learning at the shipyard in moving from one ship to the next over a 2-year period rather than a 3-year period.

In terms of the amount of shipyard work provided, a new amphibious assault ship might be

²¹(...continued)

ships have full load displacements of about 40,000 tons, making them about 40% as large as the Navy's aircraft carriers on that basis, and light displacements of roughly 30,000 tons. Amphibious assault ships each embark about 1,700 Marines, amphibious landing craft, 2 to 3 dozen Marine Corps helicopters and AV-8B Harrier STOVL (short take-off, vertical landing) "jump jets," and other Marine Corps equipment. In the future, Navy amphibious assault ships are to embark V-22 Osprey tilt-rotor aircraft and the STOVL version of the F-35 Joint Strike Fighter (JSF).

The Navy's fleet of 12 amphibious assault ships includes 5 aging Tarawa (LHA-1) class ships (LHA-1 through -5) that were procured in FY1969-FY1971 and entered service between 1976 and 1980, and 7 newer Wasp (LHD-1) class ships (LHD-1 through 7) that were procured between FY1984 and FY1996 and entered service between 1989 and 2001. An eighth Wasp-class ship (LHD-8) was procured in FY2002 and is scheduled to replace LHA-1 in 2007.

The envisioned procurement dates for the 4 replacement ships are shown in U.S. Department of the Navy. *A Report to Congress on Annual Long-Range Plan For The Construction Of Naval Vessels*. Washington, 2003. (Prepared by: Director of Surface Warfare [OPNAV N76], Washington, DC) p. 15. The report shows the first replacement ship being procured in FY2007, but the Navy's FY2005 budget submission deferred the procurement of this ship one year, to FY2008.

²² LHD-8's estimated procurement cost is \$2,014 million. At the direction of Congress, the procurement of the ship is being funded incrementally, with the final \$73.5-million increment of funding programmed for FY2006.

roughly equivalent to 3 or 4 DDG-51s.

NOC/Ingalls has been the sole builder of the Navy's LHAs and LHDs and is generally considered the leading contender for building any similar ships for the Navy in the future. General Dynamics' Bath Iron Works (GD/BIW) shipyard, however, might also be capable of building ships of this type, though this may require investments (perhaps substantial ones) in new production facilities at the yard.²³

Accelerate and Expand Cutter Portion of Deepwater Program. This option would involve accelerating procurement of new cutters to be procured under the Coast Guard Deepwater acquisition program.²⁴ It could also involve expanding the total number of cutters to be procured under the program.

The Coast Guard Deepwater program is a 22-year program for replacing and modernizing the Coast Guard's aging fleet of deepwater-capable cutters, patrol boats, and aircraft. The program envisages procuring, among other things,

- **8 new National Security Cutters, or NSCs**, nominally 421 feet long and displacing about 3,900 tons (i.e., ships roughly analogous to the Coast Guard's current high-endurance cutters), to be delivered between 2006 and 2013; and
- **25 new Offshore Patrol Cutters, or OPCs**, nominally 341-foot long and displacing about 2,900 tons (i.e., ships roughly analogous to the Coast Guard's current medium-endurance cutters), to be delivered between 2012 and 2022.

Some observers of the Deepwater program are interested in the idea of compressing the Deepwater acquisition period from 20 years to 10 years. This idea, which would accelerate into earlier years the procurement of cutters (and aircraft) now planned for later years, would increase the annual funding requirements of the Deepwater program in the nearer term but reduce its total cost by permitting the acquisition of new cutters (and aircraft) at more efficient annual rates. In March 2003, the Coast Guard submitted a report to Congress stating that compressing the Deepwater acquisition period to 10 years was feasible, that it would increase Deepwater acquisition costs over the 5-year period FY2005-FY2011 by about \$4.7 billion in then-year dollars, and that it would reduce total Deepwater acquisition costs from \$16.022 billion in then-year dollars to \$11.473 billion in then-year dollars — a reduction of \$4.549 billion in then-year dollars, or 28.4%.²⁵

²³A 1996 CRS report stated that GD/BIW could be made capable of building LHD-type ships with \$100 million to \$500 million in capital improvements. (CRS Report 96-785 F, *Navy Major Shipbuilding Programs and Shipbuilders: Issues and Options for Congress*, by Ronald O'Rourke. Washington, 1996. (September 24, 1996) p. 29.) In 2001, GD/BIW completed a roughly \$300-million in yard modernization project that included a new land-level ship construction facility and a new large floating dry dock capable of holding 28,000 tons.

²⁴For more on the Deepwater program, see CRS Report RS21019, *Coast Guard Deepwater Program: Background and Issues for Congress*, by Ronald O'Rourke. Washington, 2003. (Updated periodically) 6 pp.

²⁵U.S. Coast Guard. *Report to Congress on the Feasibility of Accelerating the Integrated Deepwater System*. Washington, 2003. 31 pp.

Supporters of the Coast Guard may also be interested in expanding the number of cutters to be procured under the Deepwater program. They could argue that current planned procurement totals reflect projections of future Coast Guard mission loads that were made prior to the terrorist attacks of September 11, 2001. Following the terrorist attacks, they could argue, the Coast Guard's homeland security responsibilities have been significantly expanded while requirements for performing non-homeland security missions (such as fisheries enforcement) have not decreased. As a result, they could argue, the number of cutters to be procured under the Deepwater program is now insufficient and should be increased, perhaps substantially.

A September 2003 report on the Deepwater program by the RAND Corporation states:

The Coast Guard's ambitious effort to replace and modernize many of its ships and air vehicles — conceived and put in motion before the September 11, 2001 terrorist attacks and officially known as the Integrated Deepwater System program — will not provide the USCG [U.S. Coast Guard] with adequate assets and capabilities to fulfill traditional and emerging mission demands. To satisfy these demands, the USCG will need the capabilities of twice the number of cutters and 50 percent more air vehicles than it has been planning to acquire over the next two decades. It cannot gain these capabilities merely by buying the assets in the current program over 10 or 15 years instead of over 20. Rather, it can only gain these capabilities by acquiring significantly more cutters, unmanned air vehicles and helicopters than are in the current acquisition program, or by mixing into the program other platforms and technologies that provide the same or additional capabilities.²⁶

Table 6 below compares quantities of NSCs and OPCs to be procured under the Coast Guard's current Deepwater plan with RAND's estimate (based in part on work done by the Center for Naval Analyses, or CNA) of the number of NSCs and OPCs that would need to be procured to fully meet traditional and emerging Coast Guard mission demands:

Table 6. Coast Guard Deepwater Cutter Procurement Quantities

Type	Current Deepwater plan	Number needed to fully meet traditional mission demands (RAND estimate)	Additional number needed to fully meet emerging mission demands (CNA estimate)	Total number needed to fully meet traditional and emerging mission demands (RAND + CNA)
NSC	8	35	9	44
OPC	25	36	10	46

Source: Birkler, John, et al. *The U.S. Coast Guard's Deepwater Force Modernization Plan: Can It Be Accelerated? Will It Meet Changing Security Needs?* Santa Monica (CA), RAND, 2003. (National Security Research Division, MR-3128 0-USCG, September 2003, Prepared for The United States Coast Guard) Table 4-2.

²⁶Birkler, John, et al. *The U.S. Coast Guard's Deepwater Force Modernization Plan: Can It Be Accelerated? Will It Meet Changing Security Needs?* Santa Monica (CA), RAND, 2003. (National Security Research Division, MR-3128.0-USCG, September 2003, Prepared for The United States Coast Guard) p. xi.

The 90 NSCs and OPCs shown in the final column of table 6 have a combined light-ship displacement equal to that of 20.7 DD(X)s.²⁷ Similarly, about 4 NSCs or about 5 OPCs would have a light-ship displacement comparable to that of 1 DD(X). Procuring 4 or 5 NSCs and OPCs per year might thus generate about as much shipyard construction work as procuring 1 DD(X) per year, and procuring 8 to 10 NSCs and OPCs per year might generate about as much shipyard construction work as procuring 2 DD(X)s per year. Building NSCs and OPCs, however, would likely require a somewhat different mix of shipyard construction skills than building DD(X)s.

The Coast Guard estimates that NSCs will cost roughly \$210 million each to procure. Based on this figure and on the relative light-ship displacements of the NSC and OPC, OPCs might cost roughly \$152 million each to procure. Using these figures, procuring 4 or 5 NSCs and OPCs would cost less than procuring a single DD(X).

Northrop Grumman's Ship Systems (NGSS) division, which includes Ingalls, is the co-leader, along with Lockheed Martin, of the team selected by the Coast Guard as the prime contractor for the Deepwater program. Accelerating and expanding procurement of Deepwater cutters could thus provide significant amounts of additional shipbuilding work to NOC/Ingalls. If the total number of cutters to be procured is expanded beyond the currently planned figure, it might also be possible to award some cutter construction contracts to GD/GD/BIW, if the various parties now involved in the Deepwater program could agree to the idea.

The Coast Guard is part of the new Department of Homeland Security (DHS). Coast Guard programs are therefore funded primarily through the DHS budget rather than the DoD budget. Accelerating and expanding the cutter portion of the Deepwater program could therefore require close coordination between DHS and DoD, and between the various congressional committees that oversee the Coast Guard and Navy budgets.

LCS Program²⁸

This section summarizes cost and funding figures for the LCS program, and then discusses the following oversight issues relating to the program:

- force structure justification for the program,
- analytical basis for the program,
- total program acquisition cost,
- the Navy's proposed strategy for funding the lead LCS,

²⁷The NSCs have a light-ship displacement of 3,290 tons; the OPCs have a light-ship displacement of 2,350 tons. Forty-four NSCs and 46 OPCs would thus have a combined light-ship displacement of 251,000 tons, which is equivalent to the light-ship displacement of 20.7 DD(X)s.

²⁸For additional discussion of the LCS program, see CRS Report 21305, *Navy Littoral Combat Ship (LCS): Background and Issues for Congress*, by Ronald O'Rourke. Washington, 2004. (Updated periodically) 6 pp.; and CRS Report RL32109, *Navy DD(X) and LCS Ship Acquisition Programs: Oversight Issues and Options for Congress*, op cit.

- the Navy's proposed strategy for funding LCS mission modules,
- the program's rapid acquisition schedule, and
- the industrial base.

Summary of Program Cost and Funding. The Navy wants the first LCS to cost between \$150 million and \$220 million in then-year dollars, exclusive of any mission modules,²⁹ and wants follow-on LCSs to cost no more than \$250 million in then-year dollars, including a representative payload package. Navy budget figures (see Table 7 on the next page) suggest that individual mission modules to be procured during the FYDP would cost an average of \$82 million each. Using the \$250-million figure for an LCS with a representative payload, the total procurement cost for a fleet of 50 to 60 LCSs might be \$12.5 billion to \$15 billion, not including at least \$1.4 billion in general research and development costs for the program.

The Navy intends to procure the first LCS, and possibly the second LCS, through the Navy's research and development account rather than the Navy's ship-procurement account. The Navy plans to procure LCS mission modules through the Other Procurement, Navy (OPN) account rather than the Navy's ship-procurement account.

Table 7 below shows funding for the LCS program through FY2009.

²⁹Mission modules are packages of equipment that are loaded onto the LCS so as to give it an ability to perform certain missions. Mission modules can be changed so as to change the mission orientation of the ship. Mission modules can include things such as helicopters, unmanned vehicles, and containerized equipment for detecting and countering mines and submarines.

Table 7. Funding For LCS Program, FY2003-FY2009
(millions of then-year dollars; totals may not add due to rounding)

	03	04	05	06	07	08	09	Total thru 09
Research, Development, Test & Evaluation, Navy (RDT&E) account								
Ship 1 construction			107.7	107.8				215.5*
Ship 2 construction				106.7	107.0			213.7*
All other RDTE**	35.3	166.2	244.4	288.4	285.9	130.5	207.5	1358.3
Subtotal RDTEN	35.3	166.2	352.1	502.9	392.9	130.5	207.5	1787.5
Shipbuilding and Conversion, Navy (SCN) account								
Ship 3				219.7				219.7
Ship 4					220.0			220.0
Ships 5, 6, 7***						625.7		625.7
Ships 8-13***							1303.6	1303.6
Subtotal SCN	0	0	0	219.7	220.0	625.7	1303.6	2369.0
Other Procurement, Navy (OPN) account for procurement of LCS mission modules								
(Qty. of modules)				(2)	(2)	(4)	(15)	(23)
Funding	0	0	0	180.0	180.0	351.3	1171.3	1882.6
TOTAL	35.3	166.2	352.1	902.6	792.9	1107.5	2682.4	6039.1

Source: Navy data provided to CRS by Navy Office of Legislative Affairs, February 20 and 27, 2004.

* Table assumes that Ship 2 is built to a different design than Ship 1 and is therefore funded in RDT&E. Cost figures for each ship include the detailed design/nonrecurring engineering (DD/NRE) costs for that ship.

** Funding for all program RDT&E other than for construction of Ships 1 and 2.

*** Three ships funded in FY2008 at total cost of \$625.7 million; six ships funded in FY2009 at total cost of \$1,303.6 million

Force Structure Justification For Program. One potential oversight issue for Congress regarding the LCS program concerns the force-structure justification for the program. Programs to acquire major defense platforms, including Navy ships, are traditionally justified in part on the basis that they are needed to fill out specific parts of approved service force-structure plans. A role in filling an approved force-structure requirement traditionally has been viewed as necessary for a program to proceed.

Although the Navy's proposal for a 375-ship fleet includes slots for 56 LCSs, the Secretary of Defense has explicitly declined to endorse the 375-ship plan. The last officially approved Navy force-structure plan — the 310-ship plan from the 2001 QDR — contains no slots for LCSs. The Navy at this juncture thus appears to be without an officially approved force-structure plan that includes slots for a significant number of LCSs.

Supporters of a 56-ship LCS program could argue that a force-structure plan for the Navy with

slots for 56 LCSs will eventually be approved. Critics could argue that, until such a plan is approved, the Navy has no approved force-structure basis for proposing a program to build any significant number of LCSs.

Potential oversight questions for Congress regarding the force-structure justification for the LCS program include the following:

- Since Secretary of Defense Rumsfeld has declined to endorse the 375-ship plan, how can the Navy still be certain it needs the 50 to 60 LCSs called for in that plan?
- If the Navy is in a transformational era of innovation and experimentation, and if the LCS promises to change naval operations in ways that cannot be fully understood today, then how can anyone know, at this point, that the Navy needs 50 to 60 LCSs, or any other number of LCS?
- If OSD doesn't support the LCS program as a way to get the Navy to 375, then in terms of future force structure, why *does* OSD support the program? Is it because OSD views the LCS as a means of reducing costs for a fleet of 300 or fewer ships? And if so, what kind of surface force might result?

Analytical Basis for Program. A second potential oversight issue for Congress regarding the LCS program concerns the analytical basis for the program. Prior to announcing the LCS program (along with the DD[X] and CG[X]) programs in November 2001, the Navy apparently did not conduct a formal analysis – called an Analysis of Multiple Concepts (AMC) – to demonstrate that a ship like the LCS would be more cost-effective than potential alternative approaches for performing the LCS's stated missions. An AMC is often performed before starting a major acquisition program to help identify or verify the most cost-effective approach.

Potential alternative approaches for performing the LCS's stated missions include (1) manned aircraft (both helicopters and fixed-wing aircraft), (2) submarines equipped with UVs, (3) a larger (perhaps frigate-sized) surface combatant equipped with UVs and operating further offshore, (4) a non-combat littoral support craft (LSC) equipped with UVs, or (5) some combination.

In testimony before this subcommittee in April 2003, the Navy acknowledged that, on the question of what would be the best approach to perform the LCS's stated missions, "The more rigorous analysis occurred after the decision to move to LCS."³⁰

³⁰Spoken testimony of Vice Admiral John Nathman, Deputy Chief of Naval Operations (Warfare Requirements and Programs), at an April 3, 2003 hearing on Navy programs before the Projection Forces subcommittee of the House Armed Services Committee. At this hearing, the chairman of the subcommittee, Representative Roscoe Bartlett, asked the Navy witnesses about the Navy's analytical basis for the LCS program. The witnesses defended the analytical basis of the LCS program but acknowledged that "The more rigorous analysis occurred after the decision to move to LCS." See U.S. Congress. Committee on Armed Services. Subcommittee on Projection Forces. *Hearing on National Defense Authorization Act for Fiscal Year 2004 – H.R. 1588, and Oversight of Previously Authorized Programs*. 108th Cong., 1st Sess. Washington, U.S. Govt. Print. Off., 2003. [H.A.S.C. 108-8, Hearings Held March 27, and April 3, 2003] p. 126. For an article discussing the exchange, see Ma, Jason. Admiral: Most LCS Requirement Analysis Done After Decision To Build. *Inside the Navy*, April 14, 2003.

In terms of the analytical basis for the LCS program, there are three key questions:

- Is there an emerging littoral threat that requires a response beyond what is in the plan of record?
- If so, what should that response be — i.e., of the various alternative approaches available for addressing this threat, which is the best or most promising?
- If a small, fast surface combatant with UVs is the best or most promising approach, what, exactly, should the ship look like, and what should be its concept of operations?

The Navy appears to have done analysis on the first question of whether there is an emerging threat that will require additional littoral warfare capabilities. Robert Work at the Center for Strategic and Budgetary Assessments (CSBA) has raised a question in his writing about whether the Navy's conclusion on this point is valid,³¹ but the Navy seems to have addressed the issue

³¹A May 2003 report on DoD programs for countering enemy anti-access and area-denial forces written by CSBA — a non-governmental study group generally supportive of defense transformation — argued this point at length, stating:

Although none of these three threats [diesel subs lurking close to shore, mines, and swarming boats] are new, naval and civilian leaders have concluded that their previous efforts to deal with them have been ineffective....

All of these judgments and conclusions are also open to debate. Indeed, the Navy may be preparing to fight the last maritime AD [area-denial] network, and with the wrong tools. As [naval analyst and author] Norman Friedman has noted after a careful review of global naval arms transfers and purchases, coherent maritime AD networks comprised of submarines, mines, and boats — and even ASCMs [anti-ship cruise missiles] — are not materializing. This suggests one of three things: potential adversaries have decided not to develop maritime AD networks; they are attracted to the maritime AD capabilities that currently occupy US naval planners, but have elected not to pursue them in the near term for other political or military reasons; or they are pursuing new capabilities to outflank DoN transformation plans.

This last circumstance would seem not only plausible, but highly probable. For any adversary contemplating a long-term competition with the US battle fleet, building a maritime AD network that US naval expeditionary forces are being specifically designed to defeat would not appear to be an attractive transformation path. From an adversary's perspective, crewed submarine operations are an extremely expensive pathway, and the prospect of taking on the US attack submarine fleet is not an attractive one. The United States is expending an enormous amount of resources and effort, however belatedly, to sweep *stationary* mines and to effect rapid but relatively narrow penetrations of *static* minefields. For an adversary to embark now on a major procurement program to buy these types of weapons would appear to be huge gamble. And except for surprise attacks, no serious naval opponent is going to emphasize swarming boats (except perhaps in special cases like the Persian Gulf, where sea room for US naval forces is limited). As was conclusively demonstrated at the Battle of Bubiyan Channel, a naval engagement during the first [i.e., 1991] Gulf War, fast attack craft attacking a prepared naval force that enjoys air superiority is not a survivable tactic.

(continued...)

analytically.

The Navy also appears to have done analysis, and is doing more analysis, on the third question, which focuses on refining the details of the general approach that has been selected to address that threat.

What the Navy apparently did not do, prior to announcing the LCS program, is conduct a rigorous AMC to address the middle question, which asks, if there is an emerging threat, what general approach should be used to address it? Instead of rigorously comparing a small, fast surface combatant to alternative approaches for performing the littoral missions in question, there appears to have been an *a priori* preference for the small, fast surface combatant.

In defending the analytical basis of the LCS program, Navy officials have stated that the Navy has conducted considerable analysis in support of the program. This comment appears true enough, but the analysis being referred to appears to be on the first and third questions, and not the middle one – which is a crucial question in the acquisition process.

The Navy can show through analysis that adding LCSs to the fleet would increase its ability to deal with littoral threats. But other potential additions to the fleet could do this as well. What the Navy has not shown through formal, rigorous analysis is that the increase provided by adding LCSs is greater than the increase that would be realized by investing a similar amount of funding in alternative approaches. That's the question that would have been addressed by a rigorous AMC. The LCS might in fact be better than the alternatives, but the Navy apparently cannot show that it reached this conclusion through a rigorous, unbiased examination of the issue.

Supporters argue that the LCS builds on about 4 years of analytical work on small, fast surface

³¹(...continued)

An alternative approach might be to pursue new underwater attack systems combining the technology of torpedoes, mobile mines, and new autonomous underwater vehicles (AUVs). Pursuing new types of stealthy uncrewed attack submarines, or long-range autonomous torpedoes, or mobile mines that constantly shift their position or patrol an engagement area would appear to be a far more attractive competitive strategy for maritime AD, in that it would side-step most, if not all, of US counter-AD plans. Moreover, such a strategy would allow attacks beyond the littoral dead zone to threaten the very viability of the [U.S.] sea base. AUV technology available today could easily allow an adversary to conduct wake-homing attacks on surface vessels at ranges out to 250 miles. In the future, even longer-range attacks will be possible, perhaps extending to ocean basin ranges. In addition, unlike in the past when the military sector dominated the development of underwater systems, today's revolution in remotely operated underwater vehicles and AUVs is being driven by the commercial and scientific communities. Since most of the research and development (R&D) for long-range AUVs is being borne by them, the costs for weaponizing AUVs are likely to be reasonable, meaning that AUV-based weapons might be built in numbers, and quickly, opening the possibility of springing either an operational or tactical surprise. Moreover, once built, weaponized AUVs would require little infrastructure overhead, and they could operate largely autonomously after the start of a war.

(Krepinevich, Andrew, Barry Watts, and Robert Work. *Meeting the Anti-Access and Area-Denial Challenge*. Washington, Center for Strategic and Budgetary Assessments, 2003. pp. 57-58. Emphasis as in the original. The excerpted passage is from the chapter of the report focusing on Navy programs, which was written by Robert Work, CSBA's naval issues analyst.)

combatants done at the Naval War College, responds to the Navy's need for forces that can operate in littoral waters against enemy anti-access and area-denial forces, and is consistent with the concept of network-centric warfare, the growing importance of UVs, and the need for more affordable Navy ships. They can also argue that the Navy in the past has built prototype ships without having first done an AMC.

Critics could argue that these arguments may be true but do not demonstrate that the LCS is the best or most promising approach for performing the LCS's stated missions. Absent a formal AMC, they could argue, the Navy has not, for example, shown why it would be necessary or preferable to send a small and potentially vulnerable manned ship into heavily defended littoral waters to deploy UVs when UVs could also be launched from aircraft or from larger ships operating further offshore. The LCS, critics could argue, is being proposed on the basis of "analysis by assertion." They can argue that while it may be acceptable to build one or a few ships as operational prototypes without first having analytically validated the cost-effectiveness of the effort, it is quite another thing to propose a 50- to 60-ship program costing at least \$14 billion without first examining through rigorous analysis whether this would represent the most cost-effective way to spend such a sum.

One option for addressing the issue of the analytical basis for the LCS program would be procure a few LCSs and then evaluate them in tests and exercises while reserving judgment on the question of whether to approve the LCS program as a series-production effort that could lead to the procurement of up to 56 ships. This option was proposed by the Center for Strategic and Budgetary Assessments (CSBA) in a report issued in May 2003 on anti-access/area-denial challenges and in a subsequent report issued by CSBA in February 2004 on the LCS program.³² A decision to pursue

³²Krepinevich, Andrew, Barry Watts, and Robert Work. *Meeting the Anti-Access and Area-Denial Challenge*. Washington, Center for Strategic and Budgetary Assessments, 2003; and Work, Robert O. *Naval Transformation and the Littoral Combat Ship*. Washington, Center for Strategic and Budgetary Assessments, 2003. 178 pp. The February 2004 report states:

Despite its promise, the LCS represents the first small US battle force capable combatant to be designed and built by the Navy and the US shipbuilding industry in over 60 years. Moreover, the LCS battle network system will introduce an entirely new concept of battle modularity that has no US or foreign naval precedent. There are therefore a number of unresolved issues about this ship and its associated organizational and support structure. Many of these issues appear to be irreducible through paper analysis. Therefore, a second proposition is that *the LCS program must undergo thorough operational experimentation in addition to any continued analytical study.*

Current Navy LCS production plans appear to be overly ambitious. Accordingly, the Navy should consider a modification to its current plans to allow more thorough testing of the ship as a battle network component system.

- Given the many degrees of design freedom in meeting the Flight 0 LCS requirements (six initial designs and three remaining designs, including a steel semi-planing monohull, a trimaran, and a surface effects ship), the Navy would be advised to build at least two different operational prototypes. However, choosing two different prototypes will not completely resolve many of the operational issues. It seems clear that only by testing squadron prototypes will the Navy be able to fully resolve some of the outstanding issues surrounding the LCS and its support structure.

- The currently approved shipbuilding profile for the LCS could be modified to build two
(continued...)

this option could reflect the following views:

- reserving judgment on whether to approve the LCS program as a series-production effort would provide DoD with time to confirm the emergence of the projected enemy littoral anti-access/area-denial systems that the LCS is to counter;
- given the significant differences between the LCS and past Navy surface combatants, real-world tests and exercises involving actual LCSs are needed to verify the projected performance attributes of the LCS and better understand how LCSs might contribute to naval operations; and
- reserving judgment on whether to approve the LCS program as a series-production effort would provide DoD with an opportunity to perform a rigorous, thorough analysis of multiple concepts (AMC) for performing littoral-warfare missions that is not biased by a pre-existing decision that a series-production LCS program is the best or most promising approach.

Potential Oversight Questions Regarding LCS. Potential oversight questions for Congress regarding the analytical basis for the LCS program include the following:

- Why did the Navy, prior to announcing the start of the LCS program in November 2001, not perform an AMC showing through a formal, rigorous analysis that a ship like the LCS was not just one way, but the best or most promising way, to perform the LCS's stated littoral warfare missions? If the analysis that the Navy conducted prior to its November 2001 announcement, including its Streetfighter analysis from 1998-2001, was sufficient to serve as an AMC justifying the Navy's decision to initiate the LCS program, why did the Navy not collect this analysis, reformat it, and

³²(...continued)

operational squadrons and to reduce the risk associated with the current, significantly compressed, LCS program. Assuming the Navy down-selects to two different designs, it should award one competitor a Research and Development (R&D) contract for a ship in FY05 and a follow-on version in FY06 paid for by ship construction money. Similarly, it should then award a second competitor a R&D ship contract in FY06 and a follow-on version in FY07. In this way, the Navy could have two different 2-ship squadrons by FY08, which would seem to be the minimum size needed to conduct comparative squadron operational tests. The Navy could also opt for slightly larger squadrons by dividing the planned ships in FY08 and FY09 among the builders. Once the squadrons were organized, however, the Navy should then delay the final production decision for at least one year to conduct meaningful operational testing.

A counter argument is made by those who believe the fleet is too small for its current global commitments, particularly those associated with the global war on terror. They argue that the LCS is needed now, in numbers. However, the Chief of Naval Operations undercut this position when he recently elected to retire some older ships early, and to accept a smaller fleet in the near term in order to free up the resources required to build up the fleet over the long term. Moreover, current strategic circumstances indicate the Navy appears to have some time before having to confront a serious naval competitor in the littorals. As a result, delaying the final LCS production run for a short period while squadron prototypes are tested would appear to appreciably lower the program's developmental risk without appreciably raising the fleet's overall operational risk. (Page iv; emphasis as in the original)

present it as an AMC? Given differences between the original Streetfighter concept and the LCS as currently proposed (and statements from Navy officials that the LCS is not the Streetfighter), how applicable is the Streetfighter analysis to the question of whether a ship like the LCS represents the best or most promising way to perform the LCS's stated missions?

- Given the Navy's commitment to the LCS program, can an AMC at this point be done in an unbiased manner?
- If the LCS program is granted approval to proceed as the Navy has proposed, would this set a precedent for other major DoD acquisition programs to be initiated without first conducting an AMC showing that the proposed acquisition solution is the best or most promising approach? If so, what might be the potential advantages and disadvantages for DoD acquisition of such a precedent?³³ What might be the potential implications for Congress' ability to conduct effective oversight of future DoD acquisition programs?
- What are the relative operational advantages and disadvantages of performing the LCS's stated littoral warfare missions using (1) manned aircraft (both helicopters and fixed-wing aircraft), (2) submarines equipped with UVs, (3) a larger (perhaps frigate-sized) surface combatant equipped with UVs and operating further offshore, (4) a non-combat littoral support craft (LSC) equipped with UVs, or (5) some combination? How do these options compare in areas such as payload capacity, ability to deploy payload systems into littoral waters in a timely fashion, ability to maintain on-station for extended periods of time, vulnerability and survivability, and potential acquisition and life-cycle operation and support costs?

Total Program Acquisition Cost. A third potential oversight issue for Congress regarding the LCS program concerns the program's total acquisition cost. Some observers question whether

³³At a May 13, 2003 professional conference, Vice Admiral Albert Konetzni, the deputy commander and chief of staff for the Atlantic Fleet, expressed misgivings regarding a number of DoD acquisition programs that he believes were initiated without sufficient prior analysis. An article reporting on Konetzni's remarks stated:

"I feel very strongly that we have lost our bearings when it comes to transformation because most of the talk is not backed up by solid intellectual analysis," states the admiral's prepared speech for [the] event....

Unfortunately, service officials in recent times "have largely abandoned operations analysis," Konetzni said. "Without looking clearly at the mission and rigorously analyzing the potential of new tactics and technologies to improve warfighting, we just get PowerPoint solutions," he said, adding, "I just can't take seeing another slide with red, yellow, and green blocks for effectiveness with nothing mathematical behind them."

A better path would be one in which proposals for innovation are studied analytically and developed with a "complete plan" — including concept of operations, training and maintenance — "before we throw these things on our ships," he said. (Costa, Keith J. Konetzni: Transformation In Need of 'Solid Intellectual Analysis.' *Inside the Pentagon*, May 22, 2003.)

LCS “sea frames” (i.e., LCSs without their payload modules) can be built for \$220 million or less, particularly in light of cost growth in other recent Navy shipbuilding programs such as the San Antonio (LPD-17) amphibious ship program and the Virginia (SSN-774) class submarine program. Navy officials state that they are confident that LCSs can be built for \$220 million or less because the LCS is similar to other small, fast ships whose production costs are well understood.

Other observers are concerned that the cost of individual LCS mission modules, and the ratio of mission modules to LCSs, is not yet clear, and that the potential total procurement cost of the LCS program, including mission modules, is therefore unknown. Navy officials acknowledge that the ratio of mission modules to LCSs has not yet been determined and that a total procurement cost for the LCS program is not available.

As shown in Table 7, the first 13 LCSs would cost an average of \$215 million each, and the first 23 mission modules would cost an average of \$82 million each. Using these figures, the combined average cost for an LCS equipped with a single mission module would be \$297 million, which is 19% more than the Navy’s \$250-million target cost for an LCS with a representative payload package. Navy officials, moreover, have spoken about equipping each LCS with more than one, and possibly as many as four or five, mission modules. Achieving the Navy’s \$250-million cost goal may therefore require reducing average procurement costs for LCSs, mission modules, or both, after FY2009.

Potential oversight questions for Congress regarding the total acquisition cost for the LCS program include the following:

- Will the Navy be able to build LCS sea frames at a total procurement cost of \$220 million or less?
- What will be the average unit cost of LCS mission modules, and when will the Navy have a more refined understanding of this issue?
- What will be the ratio of LCS sea frames to LCS mission modules, and when will the Navy have a more refined understanding of this issue?

Lead LCS Funded Through Research and Development Account. A fourth potential oversight issue for Congress for the LCS program concerns the Navy’s plan to fund the lead LCS (or two lead LCSs, if the Navy builds two lead ships to different designs) through the Navy’s research and development account. The discussion of this issue largely parallels the earlier discussion of the Navy’s plan to fund the lead DD(X) through the Navy’s research and development account and the effect this approach may have on, among other things, cost discipline in program execution, visibility of total costs, and Congress’ ability to conduct effective oversight of major defense acquisition programs.

In the case of the LCS, however, there is an additional point, because the Navy’s plan for the LCS program, unlike its plan for the DD(X) program, does not contain a “gap” year between the year that the lead LCS is procured and the year that a second LCS built to the same design is procured. Such gap years have often been included in past Navy ship acquisition programs to provide time to discover and fix design problems during the lead-ship construction process before construction of follow-on ships begins.

Supporters of the Navy's plan for not having a gap year can argue that this is consistent with the Navy's rapid acquisition schedule for the LCS program (see discussion below), and that the risks of not having a gap year for the LCS program are minimal because the LCS sea frame is a small and relatively simple ship that is similar to other small ships that members of the competing LCS industry teams have substantial prior experience in building.

Skeptics of the Navy's plan for not having a gap year could argue the Navy's approach is contradicted by the Navy's plan to fund the lead LCS through the research and development account. If building the lead LCS (or both lead LCSs) encompasses enough technical risk that the effort is better managed in a research and development-like managerial environment, they could argue, then the Navy's procurement plan should include at least one gap year to provide sufficient time for discovering and fixing problems in the ship's design. Conversely, skeptics could argue, if building the lead ship encompasses so little technical risk that a gap year is not needed, then the lead LCS (or both lead LCSs) should be procured through the Navy's ship-procurement account, like lead ships have in the past. Skeptics could argue that either there should be a gap year between lead-ship procurement and second-ship procurement or the lead ship should be procured in the Navy's ship-procurement account.

Mission Modules Funded Through OPN Account. A fifth potential oversight issue for Congress for the LCS program concerns the Navy's plan to procure LCS mission modules through the Other Procurement, Navy (OPN) appropriation account rather than the Navy's ship-procurement account. The OPN account, as its name suggests, is a large, "grab-bag" appropriation account for procuring a wide variety of items, many of them miscellaneous in nature.

Supporters of the Navy's plan can argue that it is consistent with the traditional practice of procuring ship weapons — e.g., missiles and gun shells — through the Weapon Procurement, Navy (WPN) appropriation account or the Procurement of Ammunition, Navy and Marine Corps (PANMC) appropriation account rather than the ship-procurement account. LCS mission modules, they could argue, are the payload of the LCS, just as missiles and gun shells are the payload of other types of surface combatants, and should therefore be funded outside the ship-procurement account. They can also argue that the other military systems are funded through similar approaches. The Army, for example, procures its Humvees through one account, but certain equipment intended to be loaded onto Humvees, such as machine guns or command and control (C2) modules, in other accounts.

Those skeptical of the Navy's plan to fund LCS mission modules through the OPN account could argue that the LCS mission modules are not comparable to missiles and gun shells. Missiles and gun shells, they could argue, are expendable items that are procured for use by various classes of ships while the LCS mission modules will incorporate sensors as well as weapons, are not intended to be expendable in the way that missiles and gun shells are, and are to be used largely, if not exclusively, by LCSs, making them intrinsic to the LCS program. In light of this, they could argue, it would be more consistent to fund LCS mission modules in the ship-procurement account rather than the OPN account.

Potential oversight questions for Congress include the following:

- Are LCS mission modules analogous to missiles and gun shells that are procured through the WPN and PANMC appropriation accounts? Is funding LCSs in one

appropriation account and LCS mission modules in another analogous to the approaches used for procuring other systems, such as Army Humvees and Humvee-related equipment?

- Does the Navy's plan to fund the LCS mission modules through this account effectively obscure a significant portion of the total LCS program acquisition cost by placing them in a part of the Navy's budget where they might be less visible to Congress? If so, was this the Navy's intention?
- Does funding a significant portion of the LCS program's total procurement cost through the OPN account give the LCS program an unfair advantage in the competition for limited ship-procurement funding by making the LCS program, as it appears in the ship-procurement account, look less expensive? If so, was this the Navy's intention?

Rapid Acquisition Schedule. A sixth potential issue for Congress regarding the LCS program concerns the program's rapid acquisition schedule. Compared to previous Navy combat ship acquisition programs, which typically have required 12 or more years to move from program inception to the commissioning of the first ship in the class,³⁴ the Navy is proposing to have the first LCS enter service in early 2007, or less than six years after the announcement of the program in November 2001. Meeting this schedule will require Congress to approve the procurement of the lead ship in the FY2005 budget. Congress would likely make this decision sometime in 2004 (and before November of that year), which would be less than 3 years after the announcement of the LCS program.

Navy officials say that the LCS program's rapid acquisition strategy is consistent with DoD acquisition reform, a chief goal of which is to significantly reduce acquisition "cycle time" — the time needed to move a program from initial conception to first deployment of usable hardware. They also argue that the LCS is urgently needed to meet an urgent Navy need for improved littoral-warfare capabilities.

Skeptics, while acknowledging that the LCS program's rapid acquisition strategy is consistent with DoD acquisition reform, could question whether such a strategy is needed to meet an urgent Navy operational need. They could argue the following:

- Recent major U.S. military combat operations — in Kosovo in 1999, in Afghanistan in 2001-2002, and in Iraq in early 2003 — suggest that the Navy faces no immediate crisis in littoral-warfare capabilities.
- If improved enemy littoral anti-access/area-denial capabilities do emerge, they are likely to do so gradually, over a period of many years, as potential adversaries incrementally acquire and learn to use such capabilities, permitting time for a less-hurried start to LCS procurement; and

³⁴The Virginia (SSN-774) class submarine program, for example, was announced in early 1991, and the first ship in the class is scheduled to enter service in 2004. The DDG-51 program was begun in the late 1970s and the first ship in the class entered service in 1991. The DD-21 program is the de facto successor to the DD-21 program, which began in 1994-1995, and the first DD(X) is scheduled to enter service in 2011.

- The Navy's argument about having an urgent operational need for LCSs is undercut by its own procurement profile for the LCS program, which would procure the planned total of 56 ships over a relatively long 15-year period, with the final ships in the program not delivered until about 2021.

Some observers believe that the LCS program's rapid acquisition strategy is motivated primarily not by concerns for the Navy's near-term littoral warfare capabilities, but rather by one or more of the following four factors, all of which are essentially political in nature rather than operational:

- **A belief that LCS production must start before there is a change in administration.** Some observers believe the Navy adopted a rapid acquisition strategy for the LCS program due to a belief that, to maximize the LCS program's chances of survival, the Navy must start building the first LCS before there is a possible change in administration, which could occur as early as 2005, depending on the outcome of the 2004 presidential election. The DD-21 program, these observers believe, was vulnerable to termination because it was initiated during the Clinton administration but was still years away from production when the Clinton administration was succeeded by the Bush administration. This, they believe, made it easier for the Bush administration to view the DD-21 program as a Clinton administration initiative in which the Bush administration had no stake, and easier for the Bush administration to consider terminating because defense firms at that point had not become dependent on the construction of DD-21s as a significant source of revenue. Navy officials, these observers believe, have "learned the lesson" of the DD-21 program and have concluded that starting to build the first LCS before there is a possible change in administration is important, if not critical, to the LCS program's chances of survival.
- **A belief that funding to begin LCS production must be secured before there is a change in the Chief of Naval Operations.** Other observers (including some in the group above) believe the Navy adopted a rapid acquisition strategy for the LCS program due to a belief that, to maximize the LCS program's chances of survival, the Navy must secure funding for building the first LCS before there is a change in the CNO. Admiral Vernon Clark became the CNO in July 2000 and it was generally expected that Clark, like most CNOs in recent years, would serve a 4-year term in office, meaning that he would remain CNO through the end of June 2004. At that point, the House and Senate Armed Services Committees will likely have reported their versions of the FY2005 defense authorization bill, and the House and Senate Appropriations may have reported their versions of the FY2005 defense appropriation bill. Admiral Clark, a surface warfare officer by training, is perhaps the leading proponent of the LCS program. Some observers believe Clark's successor may not be as strong a supporter of the LCS, particularly if that successor is a naval aviator or submariner rather than a surface warfare officer. LCS supporters, these observers believe, "learned the lesson" of the arsenal ship program of 1996-1997³⁵ and concluded that securing funding to build the first LCS before

³⁵For more on the arsenal ship programs, see CRS Report 97-455 F, *Navy/DARPA Arsenal Ship Program*: (continued...)

there is a change in CNO is important, if not critical, to the LCS program's chances of survival.³⁶

- **A belief that LCS procurement must not start after DD(X) procurement.** Other observers (including some of those in the groups above) believe that Navy officials who support the LCS adopted a rapid acquisition strategy for the LCS program due to a belief that, to maximize the LCS program's chances of survival, LCS procurement must not start after DD(X) procurement. In the eyes of these observers, since the LCS and DD(X) programs may compete for a limited amount of surface combatant procurement funding, starting DD(X) procurement before LCS procurement would create an opportunity — a window of time following the start of DD(X) procurement but prior to the start of LCS procurement — for DD(X) supporters to advocate terminating the LCS program so as to better ensure that there will be sufficient surface combatant procurement funds in the future to continue the DD(X) program. Navy officials, these observers believe, understand this potential dynamic and adopted a rapid acquisition strategy for the LCS program so that the LCS procurement start date could match the DD(X) procurement start date of FY2005, thereby depriving DD(X) supporters of such an opportunity.
- **A desire to limit congressional review of the program prior to seeking congressional approval for starting procurement.** A fourth group of observers (including some in the groups above) believe that Navy officials adopted a rapid acquisition strategy for the LCS program in part to limit the amount of time available to Congress to assess the merits of the LCS program and thereby effectively rush Congress into approving the start of LCS procurement before Congress fully understands the details of the program.

With regard to the possibility of rushing Congress into a quick decision on LCS procurement, it can be noted that announcing the LCS program in November 2001 and subsequently proposing to start procurement in FY2005 resulted in a situation of Congress having only three annual budget-review seasons to learn about the new LCS program, assess its merits against other competing DoD priorities, and make a decision on whether to approve the start of procurement. These three annual budget-review seasons would occur in 2002, 2003, and 2004, when Congress would review the Navy's proposed FY2003, FY2004, and FY2005 budgets, respectively. Congress' opportunity to conduct a thorough review of the LCS program in the first two of these three years, moreover, may have been hampered:

³⁵(...continued)

Issues and Options for Congress, by Ronald O'Rourke. Washington, 1997. (April 18, 1997) 133 pp.; and CRS Report 97-1044 F, *Navy/DARPA Maritime Fire Support Demonstrator (Arsenal Ship) Program: Issues Arising From Its Termination*, by Ronald O'Rourke. Washington, 1997. (December 10, 1997) 6 pp.

³⁶On October 21, 2003, DoD announced that Admiral Clark's term in office would be extended by two years, through the end of June 2006, making him only the second CNO since the position was established by law in 1915 to serve more than 4 years. (Admiral Arleigh Burke was CNO for almost 6 years, from August 17, 1955, to August 1, 1961.) By the end of June 2006, the House and Senate Armed Services Committees will likely have reported their versions of the FY2007 defense authorization bill, and the House and Senate Appropriations may have reported their versions of the FY2007 defense appropriation bill.

- **2002 budget-review season (for FY2003 budget).** The Navy's original FY2003 budget request, submitted to Congress in February 2002, contained no apparent funding for development of the LCS.³⁷ In addition, the Navy in early 2002 had not yet announced that it intended to employ a rapid acquisition strategy for the LCS program. As a result, in the early months of 2002, there may have been little reason within Congress to view the LCS program as a significant FY2003 budget-review issue. In the middle of 2002, the Navy submitted an amended request asking for \$33 million in FY2003 development funding for the LCS program. Navy officials explained that they did not decide until the middle of 2002 that they wanted to pursue a rapid acquisition strategy for the LCS program, and consequently did not realize until then that there was a need to request \$33 million in FY2003 funding for the program. By the middle of 2002, however, the House and Senate Armed Services committees had already held their spring FY2003 budget-review hearings and marked up their respective versions of the FY2003 defense authorization bill. These two committees thus did not have an opportunity to use the spring 2002 budget-review season to review in detail the Navy's accelerated acquisition plan for the LCS program or the supporting request for \$33 million in funding.
- **2003 budget-review season (for FY2004 budget).** To support a more informed review of the LCS program during the spring 2003 budget-review season, the conferees on the FY2003 defense authorization bill included a provision (Section 218) requiring the Navy to submit a detailed report on several aspects of the LCS program, including its acquisition strategy. In response to this legislation, the Navy in February 2003 submitted a report of 8 pages in length, including a title page and a first page devoted mostly to a restatement of Section 218's requirement for the report. The House and Senate Armed Services committees, in their reports on the FY2004 defense authorization bill, have expressed dissatisfaction with the thoroughness of the report as a response to the requirements of Section 218. (For details, see the Legislative Activity section of this CRS report.) It is thus not clear whether the defense authorization committees were able to conduct their spring 2003 budget-review hearings on the FY2004 budget with as much information about the LCS program as they might have preferred.

Only the 2004 budget-review season on the Navy's proposed FY2005 budget now remains for further reviewing and considering the merits of the LCS program prior to deciding whether to approve the start of LCS procurement.

Potential oversight questions for Congress concerning the LCS program's rapid acquisition strategy include the following:

- Is the Navy pursuing a rapid acquisition strategy for the LCS program to meet an urgent operational requirement for improved littoral warfare capabilities, or for essentially political purposes that are aimed at maximizing the LCS program's chances of survival? What would be the operational risk of deferring the start of

³⁷The conference report (H.Rept. 107-772 of November 12, 2002) on the FY2003 defense authorization bill (H.R. 4546) states: "The budget request for fiscal year 2003 included no funding for research and development for a littoral combat ship (LCS)." (Page 562)

LCS procurement by one or two years, so as to provide additional time for learning about and assessing the merits of the program?

- Is the Navy employing a rapid acquisition strategy for the LCS program, in part, in an attempt to rush Congress into a quick decision on LCS procurement before Congress fully understands the details of the program? If so, and if DoD later concludes that this strategy worked for the LCS program, would this encourage DoD to use a similar approach for securing congressional approval on other defense acquisition programs in the future? If so, what might be the potential consequences for future congressional oversight of proposed DoD acquisition programs?

Industrial Base. A seventh potential oversight issue for Congress regarding the LCS program concerns the potential industrial-base implications of building the LCS in a yard other than GD/BIW or NOC/Ingalls, the yards that have built the Navy's larger surface combatants in recent years. The 3 industry teams competing for the LCS program are proposing to build LCSs in yards other than GD/BIW and NOC/Ingalls.

Supporters could argue that building some or all LCSs in a yard or yards other than GD/BIW and NOC/Ingalls would have the following advantages:

- It would help constrain LCS sea frame construction costs because the yards in question are smaller facilities than GD/BIW and NOC/Ingalls that, unlike GD/BIW and NOC/Ingalls, do not include equipment for installing, integrating, and testing complex surface combatant combat systems like the Aegis system. As a result, supporters could argue, the fixed overhead costs of these yards are lower than those of GD/BIW and NOC/Ingalls, and these lower costs can be passed on to the Navy.
- Reducing the cost of the LCS sea frame would permit LCSs to be equipped with more expensive, and thus more capable, mission modules while remaining under the Navy's \$250-million target cost for an LCS equipped with a representative payload, thereby improving the cost-effectiveness of the LCS.
- Building LCSs at a yard or yards other than GD/BIW and NOC/Ingalls could broaden the geographic base of support for Navy shipbuilding programs.

Skeptics of the idea of building LCSs in a yard or yards other than GD/BIW and NOC/Ingalls could argue the following:

- Building LCSs at GD/BIW and NOC/Ingalls could reduce the cost of other Navy shipbuilding programs being performed at these yards (including the DD(X) program) by spreading the fixed overhead costs of GD/BIW and NOC/Ingalls over a larger amount of shipbuilding work. The savings associated with building LCSs at a smaller yard with lower fixed overhead costs could thus be offset by the higher costs associated with reduced spreading of fixed costs at GD/BIW and NOC/Ingalls. Building LCSs at a yard or yards other than GD/BIW and NOC/Ingalls, skeptics could argue, might even be intended by OSD or the Navy to improve the apparent affordability of the LCS relative to other Navy shipbuilding programs while perhaps not significantly reducing overall Navy shipbuilding costs. Skeptics could argue

that building LCSs at yards other than GD/BIW and NOC/Ingalls, in other words, could reduce the ship-procurement cost of the LCS, and improve its mission effectiveness, while making the cost of the DD(X) somewhat higher than it otherwise might be. Skeptics could argue that this might be consistent with an interest, should anyone in OSD or elsewhere have it, in proceeding with the LCS while allowing the DD(X) to eventually go away due to concerns about its cost. It might also be consistent, skeptics could argue, with an interest that some in OSD might have in encouraging a consolidation among the 6 GD- and NOC-owned shipyards so as to reduce their unused capacity.

- Instead of encouraging a consolidation among the 6 GD- and NOC-owned shipyards, building LCSs at a yard or yards other than GD/BIW and NOC/Ingalls could result in the creation of a seventh shipyard with a strong dependence on Navy contracts – a development that could exacerbate rather than reduce a situation of overcapacity in yards for building Navy ships.

Potential oversight questions for Congress for the LCS program regarding the industrial base include the following:

- What are the potential implications for the combined cost of all Navy shipbuilding programs if some or all LCSs are built at a yard or yards other than GD/BIW and NOC/Ingalls?
- What effect would building some or all LCSs at a yard other than GD/BIW and NOC/Ingalls have on the balance between Navy shipbuilding capacity and prospective Navy programs for using that capacity? Would it create a seventh yard with a strong dependence on Navy shipbuilding contracts?
- Does OSD or the Navy support building some or all LCSs at a yard or yards other than GD/BIW and NOC/Ingalls in part as a strategy for improving the apparent affordability of the LCS relative to other Navy shipbuilding programs while perhaps not significantly reducing overall Navy shipbuilding costs?
- Does OSD or the Navy support building some or all LCSs at a yard or yards other than GD/BIW and NOC/Ingalls in part as a strategy for pressuring GD or Northrop to reduce production capacity at their 6 yards so as to bring capacity more into alignment with prospective levels of Navy shipbuilding work?

Virginia-Class (SSN-774) Submarine Program

The FY2005-2009 FYDP delays by two years, to FY2009, the date at which procurement of Virginia (SSN-774) class attack submarines is to increase to 2 per year from the current rate of 1 per year. Navy officials have stated that this change is consistent with Congress' decision last year to approve a 5-boat (i.e., 1-per-year) multiyear procurement (MYP) for the Virginia class for the period FY2004-FY2008.

As mentioned earlier, DoD is conducting a study on undersea warfare that has the potential for changing the attack submarine force-level requirement. This study is reportedly an extension or

follow-on to an earlier DoD study on the same topic. The results of the earlier study effort were not announced.

There is concern among submarine supporters that Navy or OSD studies on undersea warfare could lead to a reduction to the 55-boat attack submarine force-level requirement that was established in the 2001 QDR. They are concerned, for example, about a study they understand to have been done last year or early this year by N81 – the assessment office of the Resources, Requirements & Assessment Division (N8) within the Office of the CNO. This study, they understand, concluded that the attack submarine force level requirement can be reduced to 37 boats if the day-to-day intelligence, surveillance, and reconnaissance (ISR) missions of attack submarines are set aside for force-planning purposes and the force-level requirement is established solely on the basis of the number of attack submarines needed for warfighting.

A total of 37 boats might be understood to include 4 converted Trident attack submarines and 33 other attack submarines. Performing ISR missions on a day-to-day basis can lead to a fairly large attack submarine force-level goal because these missions can require maintaining attack submarines on station in overseas operating areas on a continuous or frequent basis. Potential alternative means of performing ISR missions now performed by submarines include satellites, manned aircraft, unmanned vehicles launched from nearby bases or from platforms other than submarines, and human intelligence from sources inside the countries in question.

Reducing the attack submarine force-level goal to something like 37 boats would permit the Virginia-class submarine procurement rate to remain at 1 per year for many years to come, or even permit it to be reduced to something less than 1 per year for some number of years. Submarine supporters are concerned that the Navy or DoD is seeking a reduction in the attack submarine force-level goal to provide a rationale for maintaining Virginia-class procurement at 1 per year indefinitely, or for reducing it to less than 1 per year, so as to make additional funding available for procuring surface ships such as the DD(X) and LCS.

Officials' Positions on Force-Level Goal. One potential oversight issue for Congress regarding attack submarines concerns the positions of Navy and DoD officials on the attack submarine force-level goal. At a February 12, 2004, hearing before the House Armed Services Committee on the Department of the Navy's FY2005 budget, the CNO was asked whether a force of 30 attack submarines, perhaps in the year 2020, would be "an acceptable number of boats, given the capability that we may require in that area." After discussing changing metrics for measuring military capability, precision weapons, the DD(X) program, and the Joint Strike Fighter (JSF) program, the CNO stated:

I do not believe this nation can afford to have a submarine force with 30 submarines in it. The Congress has consistently funded the refueling of our fast-attack fleet. That has given us a hedge against the reduction. If you look out through the FYDP, it is 54, 55, 56 through the FYDP, and then we have SSGNs coming, which goes on top of that. This is an issue we clearly have to deal with and come to grips with what the right capitalization rate needs to be. I can just tell you, congressman, that this is a major issue for us in the 2006 bill, fundamentally, a zero-based scrub on how we are going to go about dealing with the submarine underwater warfare requirement. We will have more and better information for you and we will continue to be happy to keep you

apprised as we are working through that.³⁸

Although the CNO's response addresses the acceptability of a force of 30 boats, it does not address the acceptability of a force falling anywhere in the range of 31 to 54 boats.

Potential oversight questions for Congress concerning the attack submarine force-level goal include the following:

- Does the CNO believe that a force of fewer than 55 attack submarines would be acceptable at some point beyond the FYDP? If so, does the CNO believe that a force of fewer than 40 attack submarines would be acceptable at some point beyond the FYDP?
- Do other Navy or DoD leaders, such as the Secretary of the Navy or the Secretary of Defense, believe that a force of fewer than 55 attack submarines would be acceptable either during the FYDP or at some point beyond the FYDP? If so, do these officials believe that a force of fewer than 40 attack submarines would be acceptable either during the FYDP or at some point beyond the FYDP?
- Has N81 or any other office within the Navy conducted a study or analysis of any kind, at any point during the last 18 months, that in any way discusses the idea of reducing the attack submarine force level-goal to a figure less than 55? If so, has the Navy made this study (or studies) available to Congress? If not, when does the Navy plan to make it available to Congress? What new submarine force level was recommended, suggested, or otherwise discussed in this study (or studies)?
- Is the Navy or DoD interested in reducing the attack submarine force-level goal, and if so, is this interest motivated in part by a desire to make available more funding for procurement of DD(X)s, LCSs, or other surface ships?
- How well can ISR missions currently performed by attack submarines be performed by other systems? Do submarines make a unique contribution to the total national ISR effort? How important is the ISR information gathered by submarines?
- What would be the potential consequences for the submarine industrial base if the submarine procurement rate were reduced to something less than 1 per year?
- Did DoD decide to extend or perform a follow-on to its earlier study on undersea warfare requirements in part because it prefers not to announce a potentially controversial decision on this issue during an election year?

Potential For Procuring A Second Boat in FY2007 or FY2008. A second potential oversight issue for Congress regarding attack submarines concerns the ability of a future Congress to procure a second boat in either FY2007 or FY2008. Navy officials have stated that their decision to defer increasing the Virginia-class procurement rate until FY2009 is consistent with Congress'

³⁸Source: Transcript of hearing as provided by Federal Document Clearing House, Inc. The question was posed by Representative Schrock.

decision last year to approve a 5-boat MYP for the program. This statement may inadvertently encourage observers to believe that Congress' decision last year prohibits a future Congress from procuring a second Virginia-class submarine in either FY2007 or FY2008 (or both), should a future Congress decide that it wants to do so.

Although the bill and report language on Congress' decision last year may effectively prohibit the Navy from requesting funding in its budgets for a second boat in FY2007 or FY2008, the bill and report language do not necessarily prevent a future Congress from funding a second boat in FY2007 or FY2008 that the Navy has not requested funding for, if a future Congress wants to fund such a boat and determines that there is sufficient funding available for the purpose. A future Congress could alter the Virginia-class MYP authority to permit a second boat procured in FY2007 or FY2008 to be covered under the MYP contract. Alternatively, it might be possible to build a second boat procured in FY2007 or FY2008 under a non-MYP contract (i.e., a regular, single-boat construction contract) that is separate from the MYP contract.³⁹

In restructuring its budget to support the procurement of 5 Virginia-class submarines in FY2004-FY2008, the Navy eliminated advance procurement (AP) funding in FY2005-FY2007 that would support the construction of long-leadtime nuclear-propulsion components for second boats procured in FY2007 and FY2008. The absence of AP funding in FY2005-FY2007, however, would not prevent a future Congress from procuring a second boat in either year. It simply means that the interval between the year of procurement and the year the boat enters service would be 2 or 3 years longer than usual (i.e., 8 or 9 years rather than the usual 6 years).

Congress can, and has, fully funded the procurement of nuclear-powered ships for which there was no prior-year AP funding for long-leadtime components. Doing so involves funding the entire procurement cost of the ship in the year of procurement, including the funding that normally would have been provided in prior years as AP funding.

For example, Congress in FY1988 fully funded the procurement of the aircraft carriers CVN-74 and CVN-75 as a two-ship buy, even though there had been no prior-year advance procurement funding for the ships.⁴⁰ Following Congress' decision in FY1988, construction of long-leadtime components began right away, construction of CVN-74 itself began about two years later, and construction of CVN-75 began about two years after that. CVN-74 entered service in 1995, 7 years after the year of procurement (a typical time to build a carrier), and CVN-75 entered service in 1998, 10 years after the year of procurement.

Submarine Force-Level Goals and Future Procurement Rates. A third potential oversight issue for Congress regarding attack submarines concerns the relationship between various potential attack submarine force-level goals and future submarine procurement rates. The post-Cold

³⁹For the bill and report language on Congress' decision, see the conference report (H.Rept. 108-283 of September 24, 2003) on the FY2004 defense appropriations bill (H.R. 2658/P.L. 108-87 of September 30, 2004), pages 20, 185-186. Section 8008 of the bill approves MYP authority for the Virginia-class program "Provided, That the Secretary of the Navy may not enter into a multiyear contract for the procurement of more than one Virginia Class submarine per year."

⁴⁰The Administration's FY1988 budget and FY1988-FY1992 FYDP proposed procuring CVN-74 in FY1990, with advanced procurement funding in FY1988 and FY1989, and CVN-75 in FY1993, with advance procurement funding in FY1989-FY1992.

War downturn in procurement began sooner and was proportionately deeper for attack submarines than for most other kinds of Navy ships. As a result, the cumulative ship-procurement backlog for SSNs relative to the steady-state procurement rate for attack submarines is particularly acute, and achieving and maintaining certain potential future SSN force levels could be particularly challenging.

The issue of the rate of attack submarine procurement has been a concern in Congress since the mid-1990s, and has been discussed by CRS in testimony to Congress in 1995, 1997, 1999, 2000, and 2002, in a 1997 CRS presentation to a Defense Science Board task force on the submarine of the future, which issued its report in 1998;⁴¹ in a 1999-2000 CRS report;⁴² and in a 2002 CRS report.⁴³ This discussion is updated to take into account DoD's FY2005-FY2009 FYDP.

SSN Procurement Backlog. DoD's FY2005-FY2009 FYDP, if implemented, would result in the procurement of 15 SSNs during the 20-year period FY1990-FY2009. These 15 boats include the final Los Angeles (SSN-688) class boat (in FY1990), the second and third Seawolf (SSN-21) class boats (in FY1991 and FY1996), and the first 12 Virginia class boats (1 each in FY1998, FY1999, and FY2001-FY2008, and 2 in FY2009). This would equate to an average procurement rate of three-quarters of a boat per year for more than one-half of the SSN fleet's 33-year replacement cycle.

If, during this 20-year period, SSNs were instead procured at the steady-state replacement rate of 1.67 boats per year (a 55-boat force level divided by a 33-year life), a total of 33 SSNs would be procured. The FY2005-FY2009 FYDP, if implemented, would thus create an SSN procurement backlog, relative to the steady-state replacement rate for a 55-boat force-level goal, of 18 boats (33 minus 15) for the period FY1990-FY2009.

Effect on force levels after 2015. This 18-boat backlog in procurement, which is equivalent to about 33% of the 55-boat force-level objective, will be masked between now and about 2015 by the large numbers of SSNs procured during the 1980s. After about 2015, however, SSNs procured during the 1980s will reach retirement age and begin to leave service, and the FY1990-FY2009 backlog in SSN procurement relative to the steady-state procurement rate for the 55-boat force-level goal, if not by then redressed, will begin to become apparent.

The graph on the next page shows the consequences on the size of the SSN force for the period 2014-2045 of various SSN procurement rates after FY2007, assuming a 33-year life for most existing SSNs. The graph comes close to being a best-case projection because it assumes no early retirements of SSNs beyond those that have already occurred (i.e., the refueling of all 688s that will become available for refuelings over the next several years), as well as the conversion of 4 Trident SSBNs into SSGNs.

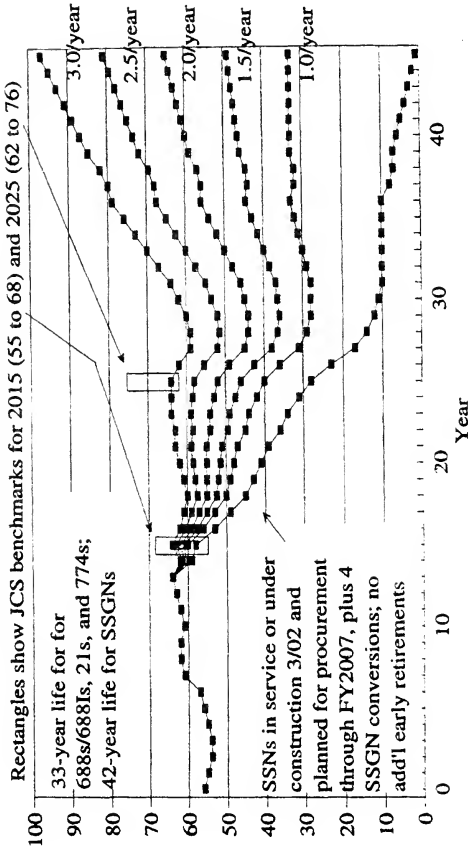
⁴¹U.S. Department of Defense. Report of the Defense Science Board Task Force on [the] Submarine of the Future. Washington, 1998. (July 1998, Office of the Under Secretary of Defense For Acquisition & Technology, Washington, D.C. 20301-3140) p. 7, 19-20.

⁴²CRS Report RL30045, *Navy Attack Submarine Programs: Background and Issues for Congress*, by Ronald O'Rourke. Washington, 1999. (Updated June 1, 2000) pp. 20-31.

⁴³CRS Report RL31372, *Navy Shipbuilding in the FY2003 Defense Budget: Issues for Congress*, by Ronald O'Rourke. Washington, 2002. (April 15, 2002) pp. 23-29.

Potential SSN force levels, 2000-2045

Notional projection, with procurement of SSN-774s after FY2007 at rates shown



Prepared by CRS, March 2002, based on U.S. Navy data.

Procurement Rate For Maintaining 55-Boat Force. As can be seen in the graph, by the late-2020s, most of the SSNs procured in the 1980s and earlier years will no longer be in service. As a consequence, unless procurement rate is increased substantially from the current 1-per-year rate, the size of the SSN force could drop substantially below 55 boats and remain there until well into the 2030s.

As also shown in the graph, if Virginia-class boats are procured at a rate of 1 per year through FY2007, then maintaining a force of at least 55 SSNs will require an average SSN procurement rate of more than 2.5 boats per year during the 17-year period FY2008-FY2024.

1999 JCS Study on SSN Force Levels. A December 1999 Joint Chiefs of Staff (JCS) study on required SSN force levels reached three main conclusions:

- “that a force structure below 55 SSNs in the 2015 [time frame] and 62 [SSNs] in the 2025 time frame would leave the CINC’s [the regional military commanders-in-chief] with insufficient capability to respond to urgent crucial demands without gapping other requirements of higher national interest. Additionally, this force structure [55 SSNs in 2015 and 62 in 2025] would be sufficient to meet the modeled war fighting requirements;”
- “that to counter the technologically pacing threat would require 18 Virginia class SSNs in the 2015 time frame;” and
- “that 68 SSNs in the 2015 [time frame] and 76 [SSNs] in the 2025 time frame would meet all of the CINC’s’ and national intelligence community’s highest operational and collection requirements.”⁴⁴

Although the conclusions of this study are sometimes mentioned in discussions of future required SSN force levels, they were not mentioned in the report on the 2001 QDR, which simply left unchanged, for the time being at least, the amended 55-boat SSN force-level goal from the final years of the Clinton Administration.

Potentially of note is that the JCS study concluded that a force of 55 SSNs in 2015 and 62 in 2025 “would be sufficient to meet the modeled war fighting requirements.” One suggestion of this conclusion is that a force of less than 55 boats might not be sufficient to meet the modeled warfighting requirements. If so, this conclusion contrasts with the statement from submarine supporters that the more recent study said to have been done by N81, as they understand it, found that a force of 37 submarines would be sufficient to meet warfighting requirements. This raises a potential oversight question for Congress regarding the factors that may have changed since 1999 that might now permit warfighting requirements to be met by a force of 37 submarines rather than 55.

⁴⁴Source: Two-page Department of the Navy information paper dated February 7, 2000 entitled “Subject: Unclassified Release of the 1999 CJCS Attack Submarine Study.”

Amphibious and MPF-Type Ship Programs

The current DoD study on forcible entry options (FEO), and the new concept of sea basing for launching, directing, and supporting expeditionary operations ashore directly from bases at sea, has the potential for changing DoD plans for procuring San Antonio (LPD-17) class amphibious ships, LHA(R)/LHX-type amphibious assault ships, Maritime Prepositioning Force (Future) (MPF[F]) ships, and Maritime Preposition Force (Aviation variant) (MPF[A]) ships. Among other things, they have the potential for reducing currently planned or projected numbers of LPD-17 class and LHA(R)/LHX-type ships and increasing currently planned or projected numbers of MPF(F) and MPF(A) ships. Some trade studies now being carried out in support of the FEO study, for example, include options for procuring as few as 8 LPD-17s, rather than the total of 12 now planned, and for procuring increased numbers of MPF(F) ships instead.

MPF-type ships are likely to be based on commercial-type hull designs and be built to a lower survivability standard than LPD-17s and LHA(R)/LHX-type amphibious ships. Navy officials have stated that they view MPF-type ships as being complements to, and not substitutes for, LPD-17s or LHA(R)/LHX-type ships. Navy officials have not, however, stated what preferred mix of amphibious and MPF-type ships they see emerging from the FEO study and the sea basing concept.

Potential oversight questions for Congress relating to amphibious and MPF-type ships include the following:

- Are the FEO study and the sea basing concept moving the Navy toward changing the currently planned or projected mix of amphibious and MPF-type ships to include fewer amphibious ships and more MPF-type ships? If so, what specific mix of LPD-17s, LHA(R)/LHX-type ships, MPF(F)s, and MPF(A)s is emerging from the FEO study and the sea basing concept?
- At what yard or yards does the Navy anticipate building MPF(F)s and MPF(A)s?
- Does the Navy or DoD plan to announce its new preferred mix of amphibious and MPF-type ships this year? If not, is the Navy or DoD deferring the announcement to next year in part to avoid announcing a potentially controversial decision on this issue during an election year?

Mr. Chairman, distinguished members of the subcommittee, this concludes my testimony. Thank you again for the opportunity to appear before you to discuss these issues. I will be pleased to respond to any questions you might have.

**QUESTIONS AND ANSWERS SUBMITTED FOR THE
RECORD**

MARCH 30, 2004

QUESTIONS SUBMITTED BY MR. BARTLETT

Mr. BARTLETT. I understand that the Secretary of Defense has delegated the other study that is to be conducted to the Navy for selection of the FFRDC. What is the status of the Navy study? And when can I receive a briefing on the approach that is to be taken?

Admiral NATHMAN. The Office of the Secretary of Defense tasked the Navy in early March to select a Federally Funded Research and Development Center (FFRDC) to perform the required fleet architecture study. Since that time the Navy selected the Center for Naval Analyses as the FFRDC and the study concept has been identified. Preliminary analysis work is in progress. A briefing on the approach being used for this study will be provided to Representative Bartlett on April 2, 2004.

Mr. BARTLETT. As gasoline goes up, fuel for our Navy goes up. At some point, we need to ask the question: how much more of our surface fleet ought to be nuclear powered? And it is not just about cost because some of that is, as the television ad said, some things are priceless.

Freeing us from a long supply chain and refueling once every 30 years just has to have some big advantages. Is there a study as to what point in time, relative to the increasing cost of fuels, that it is appropriate to consider more of our surface fleet being nuclear?

Admiral NATHMAN. The Navy does not plan to build more nuclear powered surface ships because their life cycle costs are greater than those of conventionally powered ships. Nuclear power is the choice for aircraft carriers because of operational capability and flexibility considerations that do not apply to other classes of ship.

The most recent study that can be referenced is the CVX Analysis of Alternatives (AOA) that was conducted in 1998. That AOA, conducted by the Center for Naval Analyses, computed lifecycle costs to be at least 8-10% greater for a new class nuclear powered carrier compared to a similar new class conventionally powered carrier. That 8-10% figure included the cost to build more oilers to support conventionally powered ships. Further, the study noted that the propulsion fuel price at which conventionally powered ships' operating and sustainment costs exceed those of nuclear ships was roughly \$100 per barrel. Even with the recent rise in energy prices, the latest standard DFM price is \$66.28 per barrel.

Mr. BARTLETT. The size of the Navy's fleet has been a matter of great debate over the years, a debate that appears to have no end. Some Navy officials and Members of Congress are calling for a 375-ship Navy. Many other people would prefer to avoid setting a specific number of ships, with the measurement being capability delivered.

Mr. Secretary, what is the best way to measure naval power?

Secretary YOUNG. Naval power is best measured in terms of its contribution to providing joint force options to the President to defeat adversaries on a battlefield or to assure security. Navy leadership recognizes that its future force must be balanced correctly in order to not only successfully engage both conventional and asymmetrical maritime threats, but also be postured to adjust near-term force structure with an acceptable level of operational risk in order to attain significant improvements in future capabilities.

Numbers of platforms in the water or in the air matter only insofar as those platforms contain capabilities that contribute to the combat effectiveness of the Naval and joint force. In fact, part of our transformation is the separation of capabilities from platforms through the modular, mission-tailored combat system designs we are pursuing for ships like LCS. And, as the Secretary of the Navy and the Chief of Naval Operations have said, although we have dropped below 300 ships for the first time in decades, today's Navy—by every measure—is vastly more powerful than any of its predecessors. The capabilities that we can bring to bear matter more than the numbers of platforms it takes to deliver them.

Mr. BARTLETT. Of the systems under development today, particularly new ships, the Navy claims an increasing warfighting capability per system as a basis for the investment. How do you measure capability of each ship, and then the warfighting capability of the group, the Carrier Strike Group and the Expeditionary Strike

Group, as opposed to the number of ships? How, then, is the best way to measure investment in shipbuilding?

Secretary YOUNG. The increased warfighting capability per system is not just a function of the platform, but a function of that platform's (or group's) ability to contribute to a network-enabled, joint force. The Navy determines 'warfighting wholeness' via the Naval Capabilities Development Process (NCDP). Such capabilities-based analyses are highly dependent on assumptions (including how the blue and red forces will fight (i.e., CONOPs) and measures of blue and red systems performance) and tolerance of risk. The Navy staff uses a robust modeling process to determine the balance of capability and force structure that will satisfy both the peacetime presence and warfighting demands. In both cases the demand for Naval forces is determined based on expected roles and missions, contribution of joint forces, strategic objectives, and anticipated future capabilities. Models are used to assess the adequacy of Naval forces in the warfighting scenarios then other models are used to determine the required force structure needed to satisfy the demand. Senior management review is included throughout the process to ensure consistency and common vision. From the analyses come some compelling issues, not single answers or a pure number of platforms.

The system performance characteristics provided by the Naval systems commanders are the bases for measuring ships' capabilities, though these are often assumptions based on key performance parameters and the latest projections of a future system's capability. Assessments of groups of ships are made based on both the capabilities and the employment CONOPs. One compelling insight from the analysis is that the true benefit of investing in higher-capability ships is that they maximize power forward, provide a continual, credible deterrent in the four strategic regions and significantly improve warfighting capability in the pivotal pre-hostilities to "D-Day" phase when those capabilities are needed most.

The best way to measure investment in shipbuilding is to ascertain the degree to which the investment contributes to the joint demand for sea based capability. This determination is made in the context of the NCDP and, increasingly, in the Joint Capability Integration Development System.

Mr. BARTLETT. Included in all discussions with Navy officials on the number of ships to build, is the need to maintain a commercial, privately held, shipbuilding industrial base in addition to the Navy-owned shipyards. What is your estimate of the cost to the taxpayer to maintain the current structure of commercial yards?

Secretary YOUNG. The U.S. shipbuilding industry consists of publicly owned (government) shipyards, privately owned (commercial) shipyards, and key subtier manufacturers engaged in design, manufacture, and/or maintenance of Naval and commercial vessels and key shipboard systems. Publicly owned shipyards conduct only ship repair operations and not new ship construction.

The cost to the taxpayer to maintain the current structure of our commercial shipyards can be measured in terms of the amount of Navy and commercial resources spent in the commercial yards on ship design, new construction, maintenance, overhaul and repair. The shipbuilding capacity is sized in response to meet the Navy and Coast Guard requirements for shipbuilding design and construction of ships, along with maintaining the ability to surge to meet national emergencies. The largest six shipyards workload is principally Navy, although some second tier yards maintain a mix of commercial/Navy work. If the private shipyards do not have Navy business to maintain their workload, they would require the equivalent workload from the private sector to remain viable. As such, the Navy's SCN budget represents the cost to the taxpayer to maintain the current structure of commercial shipyards.

Mr. BARTLETT. Considering the desire of these shipyards to maintain a viable business is the Navy getting what it needs in the way of affordable war fighting capability or is the Navy getting what the shipyards can deliver?

Secretary YOUNG. The Navy is getting the required war fighting capability delivered from the shipyards. The Navy balances the requirements of the war fighter with the realities of the DoD budget, considering the viability of the shipbuilding industrial base. The Navy works continuously to improve and incentivise the acquisition process, in cooperation with the industry, so that the required capability can be delivered at an affordable price.

Mr. BARTLETT. The Navy's shipbuilding programs appear to be in continual state of cost overruns and program growth. Some of this is due to overly optimistic cost assumptions on the part of the shipyards and the Navy's acquisition organization.

What is being done to put more realistic costing into these programs at an earlier stage? What are the three top causes for cost overruns in shipbuilding programs?

Secretary YOUNG. The Navy has implemented several initiatives to put more realism into our budgeting and contracting process. This includes budgeting programs to the Cost Analysis Improvement Group or Independent Navy Estimate and moti-

vating industry cost and schedule performance through contract incentive structures.

The top three factors contributing to shipbuilding cost growth have been 1) optimistic assumptions in productivity advances, 2) material cost growth due to vendor base erosion and inflation higher than OSD projections, and 3) underestimation of change orders.

The following actions have been implemented to address this shipbuilding cost growth:

1) Expanded risk analyses to identify improved productivity and producibility advances. For complex lead ships, we have shifted funding associated with these risk areas to RDT&E.

2) Instituted a policy to properly price shipbuilding programs to include realistic inflation through the use of industry specific inflation indices vice OMB or general Consumer Price Indices. We perform special material analyses to identify vendor base impacts and have included results in our cost estimates.

3) Issued a policy that limits change orders during the critical phases of major shipbuilding programs to safety, contractual defects, unavailable contractor furnished equipment, testing and trials deficiencies, and statutory and regulatory changes.

Mr. BARTLETT. With the shifting of two first of class shipbuilding programs, LCS and DD(X), into the Research and Development appropriation with a stated desire to avoid using procurement funds to fund cost overruns in programs through "prior year shipbuilding" requests, are you not avoiding the need to address the underlying cause of the cost growth?

Secretary YOUNG. No, by funding lead ships with Research and Development appropriations the Navy is addressing one of the causes for shipbuilding cost growth. One of the main causes of cost growth is the inability to manage the risk involved with the development of a complex lead ship where there is a tendency towards optimistic productivity assumptions. To address this risk and the risk associated with new technologies, the Navy has shifted the funding for the lead DD(X) and lead LCS ships into the Research and Development appropriation. This funding methodology allows Program Managers flexibility to establish stable production processes and prove the technology. This is similar to the approach that we use on other complex systems such as aircraft programs.

Mr. BARTLETT. Considering the size of the past cost overruns, are you not jeopardizing the financing of programs within the Research and Development arena rather than making trade-offs in the procurement arena?

Secretary YOUNG. The Navy has instituted policies and mechanisms, across all appropriations, to allow for tradeoffs to occur between cost and requirements within our programs to include systems and subsystems. We have imposed a discipline that limits changes during the critical phases of the major shipbuilding programs to those related to safety, contractual defects, unavailable contractor furnished equipment, testing and trials deficiencies, and statutory and regulatory changes. These actions have allowed us to control the scope and timing of changes in a planned manner. The Navy is also engaged with the shipbuilding industry to leverage interrelated acquisition programs so we can reduce our research and development costs and gain economies in production.

Mr. BARTLETT. The Littoral Combat Ship (LCS) is an ambitious program that seeks to provide capabilities to the Navy in a short period of time by leveraging development of commercial high-speed transport and existing weapon system programs. As part of this development, the LCS has bypassed the normal requirements process and created an aggressive development schedule.

Last year the Navy stated that it had not yet completed its analysis of alternatives for the LCS program. Has that analysis been completed? If not, why not? If so, has this analysis impacted the stated LCS requirements or capabilities?

Secretary YOUNG. The CNO has stated a warfighting requirement for LCS, firmly linked to Fleet priorities and war plans, and derived from the results of extensive study and wargaming, which identified the threat, stated the requirement, and quantified the gaps in the specific mission areas. LCS requirements were born of and directly linked to this analysis and the CNO's desire to close the identified mission gaps as soon as possible.

The LCS Analysis of Multiple Concepts (AMC) and tailored Analysis of Alternatives (AoA) are complete and have been approved by OSD—they represent one pillar of analysis in support of LCS requirements. The Joint Chiefs of Staff/OSD have validated the scope of the effort of the AMC to be considered an AoA in support of Milestone A, in terms of objective analysis to evaluate all material and non-material solutions that could address validated capability gaps. Additional analytic

effort in support of the Assured Access Initial Capabilities Document (ICD) focused on a comprehensive Analysis of Material Alternatives, which was completed and validated through the Requirements Integrated Process Team, which included both Joint Staff and OSD representation. Ongoing and future LCS analysis is subject to JCS/OSD review and validation. This analysis supports the stated requirements and capabilities of LCS.

Mr. BARTLETT. What is the gap in capabilities or mission accomplishments that is driving the requirements for LCS? What is the stated requirement for LCS? Has this requirement been validated by the Joint Requirements Oversight Council (JROC)? Mr. Secretary, please describe your acquisition strategy for LCS, specifically your intent to pursue construction at smaller shipyards.

Secretary YOUNG. Potential adversaries seek to deny U.S. forces such access and freedom of action by developing tailored anti-access capabilities, including small, fast surface craft carrying anti-ship missiles, torpedo-armed ultra quiet non-nuclear submarines, and large numbers of relatively inexpensive mines. The LCS program is a focused effort to defeat growing asymmetric challenges through improved combat capabilities specifically designed to operate effectively in crowded littoral environs. As articulated in the Navy's Sea Power 21 vision, the key to success of many operations will remain the ability of naval forces to assure timely access for U.S. joint forces to critical littoral regions that contain major centers of political, military, and commercial power.

The Assured Maritime Access to the Littorals ICD has been validated by JROC and approved by the CNO identified these capability gaps and determined that a small focused mission ship would be the best material solution to close those gaps. The LCS Capabilities Development Document (CDD) describes the key performance parameters required to close the capability gaps has been approved by the Navy and has been recommended by the Joint Staff for JROC approval.

With regard to use of the smaller yards, the LCS Acquisition Strategy does not specify or designate the type or size of shipyard that we expect for construction of LCS. The decision to pursue construction at smaller yards has been entirely within the control of the contractor teams. It is our understanding that the LCS competitors teamed with smaller yards for several key reasons. The first being that the manufacturing capabilities and experience of these yards were more tailored to this vessel type, size and construction methods. Second, in this vessel size sector, there exists a very broad and viable competitive base to support the LCS program both in new construction as well as life cycle support. Last, many of these yards can accommodate the Flight 0 LCS within their existing construction workload.

Mr. BARTLETT. Are you concerned that this strategy could create an "appetite" for large federal expenditures at these smaller shipyards, increasing the industrial base that must be maintained?

Secretary YOUNG. No. There is a very broad and viable base of competition and activity, which supports both other government and commercial shipbuilding activities. We believe that these yards demonstrate a high degree of flexibility in adjusting their construction workload to accommodate both government and commercial shipbuilding needs.

Mr. BARTLETT. Mr. Secretary, please provide a rationale for funding construction of the first two Littoral Combat Ships within the Research, Development, Test and Evaluation (RDT&E) appropriation vice the Shipbuilding and Conversion appropriation.

Secretary YOUNG. The Navy believes that the use of RDT&E funds for the construction of lead ships is consistent with existing program funding practice and provides a number of benefits. The primary benefit is greater flexibility in budgeting and execution, compared to procurement with SCN funds. Funding the first two LCS Class ships with RDT&E allows the program to more easily address the inherent technical and integration challenges of a lead ship(s) through the use of incremental (annual) funding while maximizing technology benefits in the shortest time period. The use of RDT&E funding is also expected to minimize prior year shipbuilding bills, which have been a Navy and Congressional concern in recent years.

Mr. BARTLETT. What impact has this funding mechanism had on funding availability for other, more traditional, research projects?

Secretary YOUNG. Because the decision to use RDT&E funding for the lead LCS and DD(X) Class ships was part of the FY 2005 budget development process, adequate funds were available for high priority R&D programs.

Mr. BARTLETT. Does the Navy have a reliable independent cost estimate for this program? If so, what is that estimate? If not, what cost/benefit analysis has been done to determine the size and potential for this program?

Secretary YOUNG. An OSD Cost Analysis Improvement Group (CAIG) independent cost assessment has been completed and will be available prior to Milestone A ap-

proval by OSD. The Navy currently envisions Seaframe costs of \$150-\$220 million (FY05\$) for the ship itself and its core mission systems. The per mission package cost for Flight 0 will cost between \$75-\$150M.

Mr. BARTLETT. We have not yet been told the total acquisition objective for LCS. How many of these ships do you intend to acquire? If the total number of Navy ships continues to hover around 300, would it be your intention to pursue the same quantity of LCS within this 300-ship Navy?

Secretary YOUNG. The current procurement objective is between 50 and 60 LCS Class ships. The need for LCS would not change with variation in fleet size. It is designed to fill specific gaps in our littoral warfighting capability.

Mr. BARTLETT. It is the indicated "plug and play" nature of the mission modules that makes LCS a unique weapons system. For the first three Littoral Combat Ships, what is your plan for mission module development?

Secretary YOUNG. For the first three Littoral Combat Ships, five Modular Mission Packages are planned for development and fielding, two MIW, one ASW, and two SUW. These mission packages are leveraging off of current programs of record as well as systems in development. LCS with its shallow, draft, high speed and standardized interfaces will deliver these systems in the littorals to optimize their employment.

Mr. BARTLETT. How will future weapons systems be selected and funded for the Littoral Combat Ship?

Secretary YOUNG. Future Flight Modular Mission Packages will be determined through a spiral development process that will continuously assess capability gaps, systems and technologies, and projected requirements and capabilities to support LCS missions. As future capability gaps are identified and new technology becomes available, the viability of new systems to close these gaps will be evaluated against technology risk and cost. New systems deemed viable through analysis will be incorporated into Modular Mission Packages through standard interfaces with the LCS seaframe, thus refreshing technology and bringing warfighting capability to the Fleet more rapidly. The result of the spiral development process will input directly into the Navy's budgeting development process.

Mr. BARTLETT. How will restrictions on Littoral Combat Ship manning and weight influence the choice of mission modules and their operations?

Secretary YOUNG. The ship designs are leveraged heavily on automation and human system interface technology to optimize manning requirements needed to support the full range of operational capability for LCS. With regard to ship displacement, the LCS will be designed to support the capabilities necessary to meet ship mission requirements, which in turn is driven by the mission package payload requirements. The objective of 210MT and the threshold 180MT for mission package payload provides flexibility in determining mission package composition and size.

Mr. BARTLETT. The Navy's newest submarine, the SSN-774, is scheduled for an Initial Operating Capability in July of 2006, and will be followed by another nine submarines, five of which will be purchased under the multi-year procurement contract authority that was provided by Congress in the 2004 appropriations bill.

Mr. Secretary, what major capabilities will be realized with the VIRGINIA Class submarine?

Secretary YOUNG. The VIRGINIA (SSN-774) Class nuclear-powered attack submarine is the first major combatant designed to meet the threats of the post-Cold War environment. It is designed for battle space dominance across a broad spectrum of regional and littoral missions as well as open-ocean, "blue water," operations. VIRGINIA's exceptional mix of capabilities will allow her to conduct very diverse missions, ranging from anti-submarine warfare (ASW) to strike (land attack and information operations/attack), covert intelligence gathering, and Special Operations Force (SOF) support. The Class design includes many features that will enable VIRGINIA to fulfill the Chief of Naval Operations' Seapower 21 objectives.

Mr. BARTLETT. Given the current emphasis on a "capabilities-based" requirements process, have you compared providing the capability delivered by submarines with other systems available to the Department of Defense?

Secretary YOUNG. OSD is currently conducting a "capabilities based" Undersea Superiority Study, where the importance and uniqueness of submarine capabilities and contributions to national and theater level objectives will most likely be reaffirmed. The study is scheduled to complete in the fall of 2004.

Mr. BARTLETT. What is the current average cost estimate, per submarine, for the 10 submarines currently under contract? Based on the stated desire of the Navy to build a submarine that is less expensive than the SEAWOLF Class Submarine, do you believe current estimates will allow the Navy to achieve that goal?

Secretary YOUNG. The current average end cost, per submarine, of the first 10 ships of the Class is \$2.29 billion (derived from the Dec. 2003, Selected Acquisition Report costs excluding Class design and post delivery).

Subsequent to the hearing, cost increases for the first four ships (\$419 million before descoping and deferral) have occurred, thus a revised 10-ship average cost is being developed. Current estimates will allow meeting the goal of building a submarine less expensive than *SEAWOLF*. The program uses the fifth ship as its cost metric. A notional fifth *SEAWOLF* Class submarine would have cost \$2.8 billion in FY 2003 which is more expensive than the \$2.15 billion currently budgeted for the end cost of the SSN-778, the fifth of the *VIRGINIA* Class that was authorized and appropriated in FY 2003.

Mr. BARTLETT. A June 2003 Joint Budget Team concluded that the data used by the shipbuilder to estimate costs for the submarine were overly optimistic. Given this, please discuss the validity of \$2.25 billion cost of the 7th SSN of this Class, the 780, budgeted for fiscal year 2005.

Secretary YOUNG. The Joint Budget Team was chartered to examine only the cost of the first four ships of the program, the SSN 774-SSN 777 (FY 1998-2002). The ships in the follow-on construction contract that covers FY 2003 through FY 2008 were budgeted based on actual returns for the first four ships. The cost drivers that resulted in the recent cost increases across the first four ships (\$419 million) are not expected to be manifested in follow-on ships, therefore, the \$2.25 billion cost of the FY 2005 ship estimated in the budget submit is considered valid.

Mr. BARTLETT. With respect to the requirement, what are the three main mission areas for which the submarine's unique capabilities are a requirement? As a percentage, identify the amount of "underway" time that is dedicated to each of these mission areas?

Secretary YOUNG. The *VIRGINIA* Class SSN has 7 primary mission areas:

- Intelligence, Surveillance and Reconnaissance (ISR), Indication and Warning (I&W), Electronic Warfare (EW)
- Covert Strike
- Special Warfare
- Battle Group Operations
- Anti-Submarine Warfare (ASW)
- Anti-Surface Warfare (ASUW)
- Covert Mine Warfare

VIRGINIA has been designed to perform in both the littorals as well as open ocean. During peacetime operations, SSNs will spend a majority of their operational time fulfilling Combatant Commander's ISR requirements. In addition, SSNs will be on station, ready to support strike or special warfare (SOF) requirements. During wartime operations, SSNs are capable of performing all missions necessary in support of operating forces.

During a deployment, a submarine may perform multiple missions simultaneously. Therefore, giving an accurate percentage breakdown is not possible. However, submarines do spend a majority of their time conducting ISR/TW/EW operations while performing many of the other mission areas stated above.

Mr. BARTLETT. Is there a possibility that the submarine of the future could be a smaller, less expensive, vehicle or potentially an unmanned vehicle?

Secretary YOUNG. The size of a submarine (and thus the cost) is determined using a multitude of factors, including speed/depth requirements, endurance, mission requirements, survivability, propulsion type, as well as other factors. The Navy continues to investigate ways to make submarines less expensive (reduced manning, COTS based equipment, etc) while maintaining or exceeding current capabilities. Undersea communication capabilities and related technologies make it unlikely for the near term that all submarine missions can be safely and adequately performed without manned subsmeribles. Unmanned Undersea Vehicles (UUVs) will, in the near future, extend the field of regards of submarines by employing sensors, searching for mines, and cuing submarines to threats.

Mr. BARTLETT. In May 2003, the DOT&E report indicated some problems with the *VIRGINIA* Class Submarine.

(a). Propulsor: The DOT&E report indicated that the propulsor would fail to meet design objectives for the *VIRGINIA* Class performance and that the Navy had not indicated how it will address this problem. Please address the actions planned to address this issue, including the cost and schedule impact of these actions.

Secretary YOUNG. The *VIRGINIA* propulsor design is on the leading edge of what is considered technologically possible and is untried on a ship at sea. Propulsor performance predictions are based on analytical design tools and Large-Scale Vehicle model test results. Predictions indicated that requirements of the Operational Re-

quirements Document (ORD) would be met as opposed to design objectives. Therefore, the design was revised to improve performance results. When *VIRGINIA* goes to sea, actual, full-scale performance data for the *VIRGINIA* design will be collected and analyzed. Full-scale performance is a complex function of overall ship characteristics combined with effects from how the ship is operated. In the context of entire ship performance, the propulsor is expected to fully meet the needs for the *VIRGINIA* Class. At-sea measurements will be used to assess the accuracy of predictions and the need within the total ship context of any additional developmental work. If this problem must be addressed further, decisions will be made balancing military utility and cost, and cost and schedule impacts will be identified.

Mr. BARTLETT. In May 2003, the DOT&E report indicated some problems with the *VIRGINIA* Class Submarine.

(b). Light Weight Wide Aperture Array (LWWAA) performance: According to the DOT&E report, the two most severe problems with LWWAA performance were channel to-channel phase variations in the fiber optic signals and failure of the system to meet cold-start requirements. The Navy spokeswoman noted that it had updated its software to correct the channel-to-channel phase variations and it had been successfully tested the corrections in the lab. Has the software been through dockside testing? What were the results? What is the status of corrections to the cold start performance? What is the impact of these problems on cost and schedule?

Secretary YOUNG. The software to correct the channel-to-channel phase variations functioned as expected when tested dockside by the vendor. The Navy has completed LWWAA subsystem testing and independently verified the software with satisfactory results. The software will next be tested dockside as part of overall Non-Propulsion Electronics System operability testing in mid-June. The software will be fully verified in underway conditions during sea trials. There is no impact to schedule of cost associated with this software correction.

As expected, the cold start (Initial Program Load (IPL)) time has not improved in dockside testing. The IPL (i.e. cold start) time remains at 5 minutes 34 seconds. Further test and evaluation will be performed during sea trials to confirm that the current IPL time does not affect system performance. Unless there is an impact, no improvements will be pursued, and no cost or schedule impacts would result.

Mr. BARTLETT. In May 2003, the DOT&E report indicated some problems with the *VIRGINIA* Class Submarine.

(c). Habitability/Access/Damage Control problems: The DOT&E report noted that access to spaces outboard the berthing areas is extremely limited and that these spaces contain high pressure air and hydraulic lines, in addition to electric cables. The most detrimental impact of poor habitability is on response to casualties in the event of fire or flooding and the crew would be limited in evacuation or response. Please address the actions planned to address this issue, including the cost and schedule impact of these actions.

Secretary YOUNG. A *VIRGINIA* Class Damage Control and Human Engineering Review Team was chartered to assess needed changes. The Review Team provided several recommendations that have been added to the *VIRGINIA* Class design and incorporated shipboard: (1) The Command and Control System Module (CCSM) berthing doors have been widened from 15 inches to 18 inches. (2) Reusable punch-out panels have been incorporated in the CCSM berthing area to aid in firefighting. (3) The location of the hinges for the power panel in the Command and Control Center (CACC) has been changed to improve access to the panel. (4) Two additional Emergency Air Breathing (EAB) manifolds in crew's mess have been added. The cost impact to incorporate these changes was \$688K including \$269K for design. There has been no schedule impact due to these changes. High pressure air and hydraulic lines as well as power cables can be isolated in emergency conditions in areas away from the casualty.

Mr. BARTLETT. In May 2003, the DOT&E report indicated some problems with the *VIRGINIA* Class Submarine.

(d). Substitution of Full-Scale Testing for Modeling and Simulation Testing: The Navy intended to cancel full-scale testing in favor of modeling and simulations (M&S). DOT&E Report asserted that M&S couldn't adequately replace full-scale testing. Please address the actions planned to address this issue, including the cost and schedule impact of these actions.

Secretary YOUNG. This comment refers to our plan to utilize the NSWC Carderock developed Target Strength Predictive Model (TSPM) to demonstrate Operational Requirements Document (ORD) compliance in lieu of a full-scale target strength trial. DOT&E, COMSUBFOR, OPNAV N091, and the Program Office have come to an agreement to use the TSPM and to utilize other developmental test (DT) events to verify model predictions. The Program Office is now developing the test plans to

best accomplish this verification testing, to be done in conjunction with other DT events. No cost or schedule impacts are anticipated.

Mr. BARTLETT. In May 2003, the DOT&E report indicated some problems with the *VIRGINIA* Class Submarine.

(e). Impacts of Voyage Management System (VMS) delay: The Navy chose the VMS as the new program providing paperless navigation capability to the *VIRGINIA* Class that cannot be installed and tested until 2006. Initial at sea testing will use paper charts and temporary plotting tables. The ship is not configured for this arrangement and it adversely affects habitability and navigation. Please address the actions planned to address this issue, including the cost and schedule impact of these actions.

Secretary YOUNG. *VIRGINIA*, the first ship of the class to operate at sea, has been equipped with the required manual plotting equipment to support the use of paper plots during sea trials and shakedown. Training and certification of the crew are being accomplished utilizing the paper plots and associated equipment in a manner similar to how the submarine force currently performs navigation. Temporary storage has been identified for use until *VIRGINIA* is retrofit with the Voyage Management System/Enhanced Control Display Unit (VMS/ECDU) system during the Post Shakedown Availability. Cost to install this temporary navigation equipment is less than \$10K, and there is no impact to the schedule. Transition to VMS/ECDU will bring *VIRGINIA* Class into alignment with Navy direction to adopt VMS as the single electronic charting system. The conversion plan to start VMS/ECDU at Hull 4 and backfit Hulls 1-3 costs \$22.3M and will give *VIRGINIA* commonality with the Fleet.

Mr. BARTLETT. The President's Budget fiscal year 2005 denoted that a *SEAWOLF* class (SSN 21) spare propulsor would be used in the *VIRGINIA* Class Submarine (SSN 780). What is the feasibility of achieving cost savings by using a *SEAWOLF* propulsor in the SSN 780 to achieve performance design objectives given the potential necessity for propulsor improvement (discussed above)?

Secretary YOUNG. Although the propulsor was referred to in PB05 as a *SEAWOLF* propulsor spare, it is a propulsor manufactured to *VIRGINIA* Class drawings and then modified to function on *SEAWOLF*. That is, it is a propulsor of *VIRGINIA* Class design that originally was intended to be installed on a hull of the *SEAWOLF* Class. Hence there are no cost savings applicable from a propulsor improvement standpoint. Cost avoidance will be realized by installing the spare propulsor on SSN 780, vice procuring a propulsor, as dictated by budget constraints. However, the Program has invested in designing a common propulsor to allow for a minimum number of spare propulsors vice procuring spares for both Classes of ships, thus saving the Navy money in the long term.

Mr. BARTLETT. (b). What are potential C3I system integration challenges (and subsequent cost increases) given the technological challenges and testing delays associated with the Light Weight Wide Aperture Array (presumably one of the 23 electronically interfaced C3I subsystems)?

Secretary YOUNG. The Light Weight Wide Aperture Array (LWWAA) is one of several acoustic sensors associated with the Sonar Subsystem, which is one of the 23 electronically interfaced C3I subsystems. Sonar was fully integrated during the 17 month period of integration and testing at the shore facility known as "COATS" (Command and Control System Module Off-Hull Assembly Test Site). To facilitate LWWAA sonar testing, simulated array data was used (note: per construction sequencing, actual LWWAA data is not available until the ship is fully assembled). Integration challenges include doing the proper up-front system engineering to ensure LWWAA simulation accurately mimics real array data. Integration risk was removed upon successful light-off of the full system in February 2004. The remaining LWWAA risk is related to actual at-sea testing, which is scheduled for the fall of 2004. The delays associated with LWWAA have had no impact on the overall sonar system's readiness to support *VIRGINIA* sea trials. There have been no cost increases to the C3I system integration resulting from LWWAA delays.

Mr. BARTLETT. According to Navy reports, production inefficiencies contributed to downward trends in labor performance at Electric Boat. A Joint Budget Team (Navy, NAVSEA, and DCAA) concluded in June 2003 that shipbuilder data was overly optimistic and estimated a \$38 million shortfall over four ships which could be funded within the current planned funding levels. How was the funding reallocated to address this shortfall? Do you anticipate requesting additional funds? How can labor performance be improved?

Secretary YOUNG. Labor performance trends have contributed to the current cost estimate. A major cost factor was Northrop Grumman Newport News' reconstitution of its submarine building labor force and GD Electric Boat and NGNN's learning after a extended gap between submarine deliveries. Unanticipated labor require-

ments and first-of-a-Class issues with the lead ship final assembly and testing have led to construction delays and increased costs. Subsequent to the hearing, an updated estimate of the funding shortfall over the first four ships of the Class. (Block I construction contract) is \$419.4 million. The Navy has taken action to descope and defer work to help offset the increased construction costs, reducing the net shortfall to \$194.6 million. To deal with the need for additional funds, the Navy will request Congressional action for Special Transfer Authority for \$25.9 million of FY 2004 funds and reprogramming of SSN 776 FY 2005 cost-to-complete funds. In addition, reprogramming of funds within Navy accounts may be needed to cover the remaining shortfall. At this time, the Navy does not anticipate requesting additional funds from Congress. The VIRGINIA Program Office is aggressively managing funds and working with the Shipbuilders to improve labor performance. For the second block of ships, a combination of learning and special incentives will improve labor performance.

Mr. BARTLETT. The fiscal year 2005 budget includes funds for the construction of the last DDG-51. Is there a requirement to continue building DDGs?

Secretary YOUNG. The last scheduled buy of DDGs is contained in the FY 2005 budget with the three DDG-51s (hulls 110-112) to be procured. There is no requirement for DDGs above those in the FY 2005 budget.

Mr. BARTLETT. With a potential that the DD(X) will not deliver in the timeframe the Navy is promoting, would it not be wise to keep your options open with respect to additional DDGs?

Secretary YOUNG. The Navy's plans to cease procurement of DDG-51 destroyers in 2005 and to award detail design and construction of DD(X) in FY 2005. This plan is the best option to meet the needs of our future Navy. We will continue to monitor the surface combatant workloads and explore the options that best meet our needs while supporting the industrial base. The Navy continues to be sensitive to the unique skills and knowledge at the surface combatant shipyards. In order to mitigate the impact of the transition from DDG-51 to DD(X) construction, the Navy has developed the DD(X) acquisition strategy with specific focus and consideration on the industrial base viability.

Mr. BARTLETT. A few years ago, the Navy implemented a shipyard agreement that provided for a certain number of DDGs to be built.

What was the agreement with respect to the number of DDG-51 ships that would be built? With the inclusion of the DDG-51 in the fiscal year 2005 budget, does the Navy satisfy the total number that it agreed to build?

Secretary YOUNG. The current DDG-51 program is a 62 ship program that was increased from the 57 ship program in the 1990s to 62. There are no agreements to build above the numbers in the current program.

Mr. BARTLETT. Has the Navy considered a DDG-51 modernization plan that would allow for improving the capability of the fleet while DD(X) is in development? If so, what options have you pursued with respect to this modernization plan and what would be the cost to implement such a plan?

Secretary YOUNG. The Navy has been exploring a DDG-51 modernization plan since January 2003. We are currently looking at numerous options, requirements, and desired capabilities and improvements.

Mr. BARTLETT. In April, an independent cost estimating group (CAIG) is expected to claim that the cost of developing CVN-21 is approximately \$1 billion greater than the Navy's current estimate.

What is the current estimate and what impact will this potential CAIG estimate have on the program?

Secretary YOUNG. The current estimate for CVN-21, as reflected in the Fiscal Year 2005 President's Budget request, is RDT&E \$3,093.5M, SCN \$8,604.7M, for a total of \$11,698.2M. Both the Navy and Office of Secretary of Defense Cost Analysis Improvement Group (CAIG) prepared independent cost estimates in support of the CVN-21 Milestone B. The Undersecretary of Defense for Acquisition, Technology and Logistics determined that a compromise between the Navy and CAIG estimates was appropriate. The compromise adds \$123.4M in R&D and \$1,290.2M in SCN to the FY 2005 President's Budget request bringing the R&D total to \$3,216.9M, the SCN total to \$9,894.9M and the total CVN-21 current estimate to \$13,111.8M.

Mr. BARTLETT. Mr. Secretary, considering your interest in budgeting to the realistic cost of programs, do you anticipate a need to increase future Navy budgets to accommodate the impact of this analysis?

Secretary YOUNG. There are many of factors causing cost growth within the shipbuilding industry. Reasonable projections of future cost growth drivers during multiple years of construction such as escalation, inflation and "fact of life" changes are now incorporated into Navy shipbuilding estimates as a matter of policy. No change

in the Navy's top line budget authority is expected as long as core Navy shipbuilding programs are fully funded.

Mr. BARTLETT. The CVN-21 is scheduled to incorporate the Dual-Band Radar Suite currently under development as part of the DD(X) program. Is the design development and construction planning of CVN-21 affected by changes in the DD(X) radar program?

Secretary YOUNG. The Dual Band Radar (DBR) development specifications cover the requirements for CVN-21 surface search, air search, and fire control. Changes in the DD(X) radar program that impact radar size, weight, power and cooling, or operational characteristics will affect the CVN-21 design and construction planning. Changes in DBR delivery schedule may impact CVN-21 planning if there is a prolonged delay for DD(X). CVN-21 is not funding DBR development, however any increases to DBR production costs will affect CVN-21.

Mr. BARTLETT. What are your plans to meet the CVN-21's requirements should the Dual-Band Radar development on DD(X) not materialize on schedule?

Secretary YOUNG. Current development schedules for the Dual Band Radar (DBR) support the CVN-21 design and construction requirements. The Multi-Function Radar (MFR) is being tested at the Navy facility at Wallops Island, VA. Land based testing of the Volume Surveillance Radar (VSR) is scheduled for FY07. Contingency plans are under consideration in the event DBR is not available in time to support the CVN-21 construction schedule; options range from building in design reservations (flexible island design) enabling late installation of DBR, to selection of an alternative radar suite.

Mr. BARTLETT. In his report for fiscal year 2003, Mr. Thomas Christie, Director, Operational Testing and Evaluation (DOT&E), outlines several areas of risk in the LPD 17 program that could delay achievement of operational effectiveness and suitability within the class. These areas of risk include the effectiveness of LPD 17's self-defense capabilities in the littoral environment, security and quality assurance vulnerabilities in the Ship Wide Area Network (SWAN), lighting incompatibilities, and C4I (command, control, communications, computer, and intelligence) shortfalls.

What actions are planned to address these issues? (Note that several of these design deficiencies have been identified by DOT&E since 1996 and have still not been resolved)

Secretary YOUNG. The FY 2003 DOT&E assessment was based upon a review of the lead ship in the early stages of construction. The deficiencies noted by DOT&E fall into three categories:

(1) Capabilities that exceed the LPD 17 Operational Requirements Document (ORD). The program will implement these upgrades to the baseline if the requirement is validated by Joint Requirements Oversight (JROC) and DON leadership.

(2) Capabilities provided by systems being installed between now and the ship's Initial Operational Capability (IOC) date. For example, a system to provide the backup elevator capability has been developed and will be tested this summer. If successful, it will be implemented on LPD 17 before the ship's IOC.

(3) Navy-wide issues which effect the LPD 17 program. Resolution to these issues will be implemented into LPD 17 consistent with the broader overall Navy solution to the issues.

Mr. BARTLETT. What will be the cost impact associated with pursuing these actions?

Secretary YOUNG. The capabilities required by the ORD have been part of the ship's budget baseline. Consequently, the cost to install these capabilities is within the current budget. Any new upgrades to the ORD baseline approved by the warfare sponsor will need to be separately budgeted.

Mr. BARTLETT. Will these actions result in further schedule delay on the lead ship, and could such delay have broader reaching implications throughout the program and fleet capabilities as a whole?

Secretary YOUNG. Installation of capabilities required by the ORD will not impact the delivery schedule of the lead ship. Scheduling for any additional validated and budgeted upgrades will be determined based on cost, schedule and technical considerations.

Mr. BARTLETT. Will these actions:

- Impact the testing schedule of LPD 17 or delay achieving operational effectiveness and operational suitability in LPD class?
- Impact production schedules of other LPDs that are under construction or have been authorized?
- Impact LPD 17 deployment schedule?
- Impact the overall amphibious lift capability of the Navy, given the impending retirements in the current amphibious fleet?

Secretary YOUNG. The LPD 17 program office does not foresee negative impacts to LPD 17, other ships of the Class, or the overall amphibious fleet as result of installing capabilities required to meet the ORD. New capabilities levied on the program outside of the ORD will require a case-by-case analysis of cost and schedule impact.

Mr. BARTLETT. The President's Budget request for fiscal year 2005 includes \$1.109 million in funding for LPD 23, the seventh ship in the LPD 17 class. The funding requested for this ship represents a reduction of \$138.2 million—or 11.1 percent—from the LPD 22, which was authorized and funded in fiscal year 2004. This significant size of this decrease raises questions as to the overall realism of the cost estimate for the fiscal year 2005 ship, the LPD 23, especially given the historic cost growth experienced within this program. The realism of the LPD 23 cost estimate can be further questioned when observing that the anticipated end costs for LPDs 25 through 28, which are slated for authorization in fiscal year 2007 through fiscal year 2010, reflect substantial cost growth. These ships are expected to require funding increases of 8 percent, 11 percent, 13 percent, and 45 percent, respectively, from the funding request for the fiscal year 2005 LPD 23 ship.

Given the history of cost growth within the program along with the Navy's anticipation of rising costs on future LPD ships, how realistic is the Navy's cost estimate for the fiscal year 2005 ship (LPD 23)?

Secretary YOUNG. The Navy cost estimate is very realistic. The estimate for LPD 23 is based upon the LPD 17 technical baseline, the FY05 President's Budget request shipbuilding profile and the LPD 21 contract signed in November 2003, adjusted for recent material/labor rate increases.

Mr. BARTLETT. What accounts for the cost decreases between LPD 22 (fiscal year 2004 ship) and LPD 23 (fiscal year 2005 ship) in HM&E, Ordnance, and Electronics costs (all GFE)?

Secretary YOUNG. When the FY04 ship was estimated for the FY04 President's Budget, a procurement gap existed in FY05. As a result of that gap, funding to cover sustaining efforts (engineering, logistics and programmatic support) across FY04 and FY05 were included in the FY04 ship estimate. When Congress later added Advance Procurement for the FY05 ship, the Navy pricing of the FY05 ship assumed that the FY04 ship would continue to pay those sustaining costs in FY05. In combination, the LPD 22 and LPD 23 are properly priced to meet all requirements for those two ships.

Mr. BARTLETT. What accounts for the cost decrease between LPD 22 and LPD 23 in Basic Construction costs?

Secretary YOUNG. The shipyard and systems integrator identified critical contractor furnished COTS equipment that could no longer be procured for the FY04 ship. The LPD 22 basic construction includes the nonrecurring cost for the replacements, re-engineering and development of new logistics products for these parts.

Mr. BARTLETT. What accounts for the rising end costs for new LPD 17 class constructions that are planned to occur in the out years (LPDs 25 through 28—fiscal year 2007 through fiscal year 2010)?

Secretary YOUNG. In addition to inflation, the primary reason for the increase in cost across for LPD 25-LPD 27 is increased GFE cost due to no longer being part of the RAM multi-year procurement contract. For LPD 28, the FY10 ship, additional cost includes a factor for loss of learning/material impacts associated with end of program production, sustaining the program's engineering, logistics and programmatic support from FY10 until FY14 when the ship delivers, and other end of class costs including procurement of major shore based spares.

Mr. BARTLETT. Recent program office reports outline several issues and events that have the potential to cause additional cost overruns and schedule delays in the LPD 17 and 18 construction efforts. These issues include continuing inefficiencies in production, industrial base shortages in key trades, a contractor proposal to delay launch of follow on ships (LPD 18 thru 20), and an ongoing Navy and contractor review of milestone schedules for LPD ships.

What impact, if any, are these activities expected to have on cost containment and schedule achievement within the LPD 17 program?

Secretary YOUNG. Cost control measures in other areas of the budget have created a risk margin in the overall budget. The shipbuilder's efforts to control cost on the follow ships, including evaluation/employment of lessons learned, has resulted in revised build and launch schedules for LPD 18–20. Pending further lead ship lessons learned through the waterborne test program, 10–12 weeks of risk exists with the contractual delivery schedules for these ships.

Mr. BARTLETT. The stated employment of the LHA is to provide forward presence and power projection as an integral part of joint, interagency and multinational maritime expeditionary forces.

The Committee understands that the Navy is considering a re-structure of the LHA Replacement Program to find a more affordable option. What is the Navy's current plan in this regard? Is this current plan funded in the fiscal year 2005 budget request?

Secretary YOUNG. On January 23, 2004, the LHA Replacement (LHA(R)) Program received direction from ASN (RDA) to pursue a more affordable LHA(R) platform, designated LHA(R) Flight 0. Subsequently on April 30, 2004, ASN RDA, CNO, and CMC provided direction via the attached letter to develop options for a more aviation capable platform. Combining lessons learned from recent combat operations in Afghanistan and Iraq with the Analysis of Alternatives (AoA) from the LHA(R) and MPF(F) programs, DoN has concluded that increasing the aviation capability of a Class of amphibious assault ships is a key enabler for future joint warfighting capability. The Navy has completed a feasibility design and is beginning contract design. The LHA(R) Flight 0 ship will be a transitional platform fielding transformational capabilities with an emphasis on increased aviation warfighting capability.

The ASN(RDA)/CNO/CMC directed plan is supported by the funding contained in the FY 2005 President's Budget request that supports LHA(R) design efforts.

Mr. BARTLETT. In fiscal year 2004, the Navy successfully argued that the LHA(R) budget request should not be reduced due to anticipated approval of the program by the Joint Requirements Oversight Council (JROC). The Committee understands that approval has not yet been granted. When do you anticipate such approval?

Secretary YOUNG. At the time of program redirection, a draft LHA(R) Capabilities Development Document (CDD) was in staffing for JROC review and approval. The attached LHA(R) Flight 0 requirements letter provides the framework of the revised LHA(R) Flight 0 design and the basis of a revised CDD. JROC approval of the LHA(R) Flight 0 CDD is planned in FY 2005.

Mr. BARTLETT. Unlike the other military services, the Navy budget must accommodate the acquisition of a wide variety of equipment—ships, jet aircraft, rotary-wing aircraft, ground vehicles, airlift aircraft—just to name a few big items. The acquisition of these systems has been slowed over the past few years as the Navy and Marine Corps have focused on raising the level of readiness.

What are your plans to re-capitalize ships and aircraft given the need to maintain readiness and participate in contingency operations?

Secretary YOUNG. The overall goal for the re-capitalization plan of the Navy and Marine Corps Team is striking a balance between meeting the demands of current routine and surge operations while committing investment towards capabilities that better serve assessed future requirements. Navy and Marine Corps leadership recognizes that there is a significant level of future risk in the area of access-denial that needs to be met by a more capable maritime component force. In order to guarantee it is balanced correctly in the future, the Navy and Marine Corps Team continuously assesses near-term force structure against an acceptable level of current operational risk in order to invest in significant improvements in future capabilities. The Annual Long-Range Plan For The Construction of Naval Vessels, which is fully supported financially within the Future Year Defense Program in the FY 2005 President's Budget request, shows how we will provide the necessary investment in new construction programs that will meet the demands of today and anticipated challenges of the future.

Mr. BARTLETT. The procurement request in the fiscal year 2005 budget is approximately \$27.7 billion, down \$2.1 billion from fiscal year 2004 and only \$500 million greater than the fiscal year 2003 level. Given the low dollar amount of your procurement accounts, how do you anticipate being able to execute your re-capitalization plans?

Secretary YOUNG. The Annual Long-Range Plan For The Construction of Naval Vessels, which is fully supported financially within the Future Year Defense Program in the FY 2005 President's Budget request, shows how we will provide the necessary investment in essential new construction programs that are pivotal in the transformation to the Global CONOPs force. Furthermore, the shipbuilding and aircraft plans budget for and achieve the currently assessed number of ships and aircraft in the outyears required to sustain the transformation to the Global CONOPs force structure. Of necessity, we are deferring some recapitalization in the early years in order to invest in the systems and capabilities that are central to Navy's transformation. In addition, we are continuing to divest ourselves of legacy platforms to free funds for the development and construction of future ships with new capabilities for future missions.

Mr. BARTLETT. Looking out to the 10-year time period of 2009-2019, the Committee sees a concerning budgetary trend with respect to plans for re-capitalization: multiple systems currently in various stages of development will reach initial acquisition and operation within the same timeframe.

What are the anticipated dates for Milestone 3 procurement decisions and initial operating capability (IOC) for the DD(X), the CG(X), and the *VIRGINIA* Class submarine?

Secretary YOUNG. The anticipated dates for Milestone C procurement decisions and Initial Operating Capability (IOC) for the above listed programs are as follows:

	<u>MS C</u>	<u>IOC</u>
VA SSN	SEP08	JAN06
DD(X)	MAR14	JAN13
CG(X)	Under Review	Under Review

Mr. BARTLETT. You mentioned that we are currently without an officially approved, consensus plan for the future size and structure of the Navy. Why are we in that situation, and what are its potential implications?

Mr. O'ROURKE. In September 2001, as part of its final report on the 2001 Quadrennial Defense Review (QDR), the Department of Defense (DoD) approved a plan for a Navy about 310 battle force ships. In approving this 310 ship plan (and other U.S. military force-structure goals), however, the 2001 QDR report cautioned that as DoD's "transformation effort matures—and as it produces significantly higher output of military value from each element of the force DoD will explore additional opportunities to restructure and reorganize the Armed Forces." Moreover, since that time, DoD has launched studies on undersea warfare and forcible entry options. These studies could affect, among the other things, the required number of attack submarines and the required number and kinds of amphibious ships. In launching these studies, DoD thus created uncertainty regarding two of the principal categories of ships that define the 310-ship plan.

Navy leaders since 2002 have spoken of an alternative plan for a 375-ship Navy. Although Navy leaders in speeches and testimony to Congress routinely refer to the 375-ship plan, the plan remains a Navy proposal rather than an official DoD goal. At a hearing before the House Armed Services Committee on February 5, 2003, Secretary of Defense Donald Rumsfeld, when asked about the 375-ship plan, explicitly declined to endorse it. At a March 10, 2004, hearing before the Defense subcommittee of the Senate Appropriations Committee, the Chief of Naval Operations (CNO) stated: "I want to say that the Secretary [of Defense] has allowed me to speak to that number [375]. It's not a number that has been sanctioned by the Department [of Defense]. It is the CNO's view."

In summary, DoD has taken steps that raise questions about key parts of the 310-ship plan, but has also declined to endorse the Navy's 375-ship plan—or any other alternative plan for the future size and structure for the Navy. As a result, there is now some uncertainty regarding the planned size and structure of the Navy. Instances of uncertainty over the planned size and structure of the Navy occur from time to time; the last instance was during the first two years (1989-1990) of the former Bush Administration.

Although periods of uncertainty regarding the planned size and structure of the Navy occur from time to time, if these periods persist for an extended period of time, they can have potentially significant implications for Congress' ability to conduct oversight of Navy budgets and programs.

Three key potential oversight questions for Congress in examining the Navy's budgets and programs are the following:

- Has the Navy accurately identified, through capabilities-based planning, the kinds of capabilities it requires now and in the future?
- If so, would the Navy's planned force structure provide a Navy with these capabilities?
- If so, would the Navy's proposed procurement programs support a Navy with this force structure, and does the Navy's budget present a credible plan for adequately funding these procurement programs?

By examining these three oversight questions, Congress can, at the broadest level, reconcile stated Navy capability goals with required force structure, and required force structure with specific programs and available funding.

If, however, there is no current, officially approved, consensus plan for the size and structure of the Navy, the middle element in this chain of three questions is missing, and Congress may find it difficult, if not impossible, to "close the oversight loop" by reconciling desired capabilities with planned force structure and proposed programs and budgets.

DoD and Navy officials may find the current uncertainty over the planned size and structure of the Navy convenient for managing any latent differences they may have over the planned size and structure of the Navy. The Navy, for example, may desire a fleet of about 375 ships, while DoD may support a fleet of 310 (or less than 300) ships. If so, uncertainty over the planned size and structure of the Navy may permit DoD and the Navy to continue to debate this issue without exposing their differences to others.

It is also possible, however, DoD and Navy officials may find the current uncertainty over the planned size and structure of the Navy useful for the maneuvering room it provides in responding to congressional oversight questions. In the absence of a current, officially approved, consensus plan for the size and structure of the Navy, Navy and DoD officials are free to speak broadly about individual programs, and offer vague or changing total planned procurement quantities for various programs, without having to show Congress that it has a credible plan for funding these programs in certain total quantities within a certain total amount of available funding. This situation can make it significantly more difficult for Congress to carry out basic oversight functions in its review of Navy budgets and programs.

When asked about the current uncertainty regarding the planned size and structure of the fleet, Navy and DoD officials sometimes make reference to the concept of capabilities base planning, and have argued that numbers of ships and aircraft per se are not as important as the total amount of capability represented in the fleet.

As a tool for planning future military forces, capabilities-based planning offers certain potential advantages, particularly in a time of multiple and uncertain potential future threats to U.S. interests. It can be argued, however, that at any given time, it should be possible, given current and projected ship and aircraft designs, to translate the total collection of desired Navy capabilities into a force-structure plan for a certain number of Navy ships and aircraft of different types. DoD routinely translates desired capabilities into desired numbers of platforms on this basis. Those numbers may change over time as threats and technologies change, but DoD's recent shift to capabilities-based planning, it can be argued, does not serve as a reason to set aside permanently the question of the planned size and structure of the fleet.

Mr. BARTLETT. The Navy has said there are 9 new ships in the budget this year. Do you agree with that?

Mr. O'ROURKE. The 9-ship total includes the lead LCS, whose acquisition cost of \$215.5 million is split evenly between FY2005 and FY2006, and the lead DD(X), for which the FY2005 budget provides only the first \$221 million, or about 8%, of an estimated total design and construction cost of \$2.8 billion. The remaining 92% of the cost of the lead DD(X) is to be provided during the period FY2006-FY2011.

On this basis, it might be more accurate to say that the FY2005 budget funds the acquisition of a total of perhaps 7.58 ships—7 ships whose acquisition is fully funded, plus 50% of the relatively inexpensive lead LCS, plus 8% of the more expensive lead DD(X).

Mr. BARTLETT. The CNO has said that the shipbuilding budget has grown from \$4.7 billion four years ago to \$11.1 billion today. Do you agree with that?

Mr. O'ROURKE. I do not agree with this statement. Four years ago, the Navy was executing the FY2000 budget and had submitted its proposed FY2001 budget to Congress. As shown in the table below, the amount requested for the SCN account for FY2000 was about \$6.7 billion, the amount provided for the SCN account for FY2000 (with post-enactment adjustments) was about \$7.1 billion (or about \$7.5, if ship-procurement funding in the National Defense Sealift Fund is added in), and the amount requested for the SCN account for FY2001 was about \$12.3 billion.

These figures are all much higher than \$4.7 billion. Indeed, the requested figure for FY2001 is higher than the \$11.1 billion requested for FY2005. And none of the other SCN figures on the table approach \$4.7 billion—they are all above \$8 billion.

As also shown in the table, funding shipbuilding increased substantially from FY2000 to FY2001, declined somewhat in FY2002 and FY2003, and then increased in FY2004 and (in requested form) FY2005 back to something close to the FY2001 level. The suggestion from the numbers is that the shipbuilding account, rather than growing steadily from four years ago, has shown no clear trend of increase or decrease since FY2001.

Table 1. Funding for Navy Ship Acquisition, Requested and Provided, FY2000-FY2005
(millions of then-year dollars)

	FY00		FY01		FY02		FY03		FY04		FY05
	Req.	Prov.	Req.	Prov.	Req.	Prov.	Req.	Prov.	Req.	Prov.	Req.
SCN	6679	7125	12297	11965	9344	9278	8191	9108	11439	11402	9962
RD TEN	0	0	0	0	0	0	0	0	0	0	329*
NDSF	0	359	0	128	0	361	389	310	722	722	768
Total	6679	7484	12297	12093	9344	9639	8580	9418	12161	12124	11059

Source: Annual Navy budget highlight books for FY2000-FY2005. NDSF figures are funding in NDSF for "Sealift Acquisition" or "Strategic Sealift Acquisition."

*Includes \$108 million for lead LCS and \$221 million for lead DD(X).

Mr. BARTLETT. The Navy says that follow-on DD(X)s will cost an average of \$1.2 billion to \$1.4 billion each. You seem to think there's a risk they could cost more. Why is that?

Mr. O'ROURKE. The Navy estimates that the 5th and 6th DD(X)s would cost an average of \$1.2 billion to \$1.4 billion each in constant FY2002 dollars to procure. Some observers are concerned about the Navy's ability to build follow-on DD(X)s at such a cost, for the following reasons:

- **Range of uncertainty in Navy estimate.** The Navy's estimated cost includes a \$200-million range of uncertainty, suggesting that the Navy does not have a complete understanding of potential costs for building the DD(X) design. Previous shipbuilding programs at this stage in the process (i.e., the year when the Navy requests funding to begin building the lead ship) have featured a point cost estimate for the follow-on ships.
- **CBO's estimate is 29% to 50% higher.** The Congressional Budget Office (CBO) estimates that a class of 24 DD(X)s built at a rate of 2 per year would have an average unit procurement cost of \$1.8 billion each in constant FY2003 dollars. This estimate is 29% to 50% higher than the Navy's estimate, suggesting that there are major analytical differences between the Navy and CBO regarding the potential cost of the follow-on ships. Contrary to the speculation offered by Navy witnesses testifying before the Seapower subcommittee of the Senate Armed Services Committee on March 3, 2004, almost none of the difference between the Navy and CBO estimates is caused by the use of dollars with different purchasing powers. The Navy estimate is priced in constant FY2002 dollars, while the CBO estimate is priced in constant FY2003 dollars. Constant FY2002 and FY2003 dollars differ in purchasing power by about 1.2%.
- **The Navy's estimate implies a much-reduced cost per weight.** For ship designs of comparable complexity, construction costs are often roughly proportionate to ship displacement. As shown in the table below, the Navy's estimated procurement cost for follow-on DD(X)s equates to a cost per thousand tons (CPTT) of light-ship displacement (i.e., the empty weight of the ship without fuel) that is 36% to 45% less than that of today's DDG-51 destroyers, which are ships of comparable complexity, while CBO's estimate equates to a CPTT that is 18% less. If the DD(X) CPTT is set equal to the DDG-51 CPTT, the DD(X) would cost more than \$2 billion. This comparison, moreover, was based on a recent DDG-51 that is well down the production learning curve. If the cost of this DDG-51 were used to derive the procurement cost of an identically configured DDG-51 built at the same annual rate but much earlier on the learning curve, the cost of that DDG-51 would be higher, and the percentage differences in CPTT between the DDG-51 and the DD(X) as estimated by the Navy and CBO would be greater. The DD(X) contains producibility features not present in the DDG-51 design. These features will help reduce the shipyard labor costs of building the DD(X) design. Shipyard labor costs might account for 30% to 40% of the total cost of a complex surface combatant like a DDG-51 or DD(X). The remaining 60%-70% of the ship's cost is for materials and components delivered to the shipyard, and for government administration of the program. The Navy has not explained in detail how producibility features in the DD(X) design will permit the DD(X) to be built for a total (not just shipyard labor) cost that equates to a reduction from the DDG-51 CPTT of 18%, much less 36% to 45%.

- **Other recent shipbuilding programs have experienced significant cost growth.** The Navy has experienced substantial cost growth in other recent Navy shipbuilding programs, such as the LPD-17 amphibious ship program and the *VIRGINIA*-class submarine program. Follow-on LPD-17s, for example, were originally estimated to cost about \$750 million each in then year dollars. (See, for example, the P-40 exhibit for the LPD-17 program in the proposed FY1999 budget submitted to Congress in February 1998.) Follow-on LPD-17s are now budgeted at roughly \$1,100 million to \$1,250 million each—an increase of roughly 47% to 67%. Only a portion of this increase is due to inflation (i.e., the use of then-year dollars) and the reduction in the planned LPD-17 procurement rate to 1 per year from 2 per year.

Table 2. Cost Per Thousand Tons (CPTT)

Ship	Cost (when procured at 2 per year)	Full load displacement (tons)	Light-ship displacement (tons)	CPTT	DD(X) CPTT compared to DDG-51
DDG-51	\$1.25 bil.	-9,000	6,950	\$180 mil.	—
Estimates for DD(X)					
Navy	\$1.2-1.4 bil.	-14,000	12,135	\$99-115 mil.	-36% to -45%
CBO	\$1.8 bil.	-14,000	12,135	\$148 mil.	-18%
CPTT=DDG-51	\$2.18 bil.	-14,000	12,135	\$180 mil.	equal

Mr. BARTLETT. You mention the option of a low-cost gunfire support ship. Please explain what you have in mind, and why it might be worth considering.

Mr. O'ROURKE. A low-cost gunfire support ship is a potential option for providing the Navy with additional gunfire support capability at a lower unit procurement cost than the DD(X). This option might be considered if the DD(X) program were to be judged unaffordable or not cost-effective.

A low-cost gunfire support ship could be a relatively simple ship equipped with 1 or 2 155mm Advanced Gun Systems or AGSs (i.e., the gun system scheduled for the DD(X)) and only such other equipment that is needed for basic ship operation. Other than the AGSs and perhaps some advanced technologies for reducing crew size and thus total life-cycle cost, such a ship could use existing rather than advanced technologies so as to minimize development time, development cost, and technical risk. Such a ship might be considerably smaller and less expensive to procure than the DD(X).

Of the number of such ships procured—either 24 or some smaller number—some fraction (a total of perhaps 4 to 8 ships) might be forward-stationed at sites such as Guam or Diego Garcia, so as to be available for rapid crewing and movement to potential contingencies in the Western Pacific or Indian Ocean/Persian Gulf regions. The goal under this option would be to procure specialized AGS-armed ships as a niche capability for the Navy, and then forward-station some of that capability so as to maximize the odds of being able to bring a desired number of AGSs to an overseas theater of operation in a timely manner on those occasions when it is needed.

Mr. BARTLETT. The Navy sees merit in funding the lead DD(X) in the R&D account rather than the shipbuilding account. What is the potential downside of this approach?

Mr. O'ROURKE. Skeptics could argue that the Navy's proposal to fund the lead DD(X) in the R&D account could weaken cost discipline in designing and building the lead DD(X), and complicate congressional oversight of the effort, by doing the following:

- permitting the Navy to fund the lead-ship design and construction effort with incremental funding;
- making the total cost of the lead DD(X) less visible by moving it out of the high-visibility shipbuilding account;
- permitting the Navy, in budget documents, to blend lead-ship design and construction funding with other DD(X) research and development funding, thereby further obscuring the total cost of the lead DD(X);
- making it easier for the Navy to adjust annual funding levels for the leadship design and construction effort without necessarily attracting attention; and

- permitting the Navy to finance cost overruns in the lead-ship design and construction effort through the research and development account rather than through the ship-procurement account, where the additional funding would be included in the high-visibility line item entitled “Completion of Prior Year (PY) Shipbuilding.”

The Navy’s approach to funding the lead DD(X), skeptics could argue, turns on its head the longstanding congressional view, dating to the 1950s and embodied in the full funding policy imposed on DoD by Congress at that time, that cost discipline in procurement is best achieved through up-front full funding of an item’s procurement cost. As discussed in a 2002 CRS report (RL31404, *Defense Procurement: Full Funding Policy—Background, Issues, and Options for Congress*, by Ronald O’Rourke and Stephen Daggett), Congress imposed the full funding policy on DoD in the 1950s to make the total procurement costs of DoD weapons and equipment more visible and thereby enhance Congress’ ability to understand and track these costs. Congress’ intent in imposing the policy was to strengthen discipline in DoD budgeting and improve Congress’ ability to control DoD spending and carry out its oversight of DoD activities. Understanding total costs and how previously appropriated funds are used are key components of Congress’ oversight capability.

Prior to Congress’ imposition of the full funding policy, DoD weapon procurement was accomplished through incremental funding. Incremental funding fell out of favor because opponents believed it did (or could do) one or more of the following:

- make the total procurement costs of weapons and equipment more difficult for Congress to understand and track;
- create a potential for DoD to start procurement of an item without necessarily understanding its total cost, stating that total cost to Congress, or providing fully for that total cost in future DoD budgets - the so-called “camel’s-nose-under-the-tent” issue;
- permit one Congress to “tie the hands” of one or more future Congresses by providing initial procurement funding for a weapon whose cost would have to be largely funded by one or more future Congresses;
- increase weapon procurement costs by exposing weapons under construction to potential uneconomic start-up and stop costs that can occur when budget reductions or other unexpected developments cause one or more of the planned increments to be reduced or deferred.

As discussed in the 2002 CRS report on the full funding policy (and updated here to reflect the updating of executive branch documents), OMB Circular A-11 provides guidance to executive branch agencies on the preparation of budget submissions to Congress. The current version of the circular was issued on July 25, 2003. Section 31.4 of the circular, which covers the full funding policy, states in part:

Requests for acquisition of capital assets must propose full funding to cover the full costs of the project or a useful segment of the project, consistent with the policy stated in section 300.6(b). Specifically, requests for procurement programs must provide for full funding of the entire cost.

Sections 300.6(a) and 300.6(b) of the circular state in part:

(a) Background.

Good budgeting requires that appropriations for the full costs of asset acquisition be enacted in advance to help ensure that all costs and benefits are fully taken into account when decisions are made about providing resources. For most spending on acquisitions, this rule is followed throughout the Government. When capital assets are funded in increments, without certainty if or when future funding will be available, it can and occasionally does result in poor planning, acquisition of assets not fully justified, higher acquisition costs, project (investment) delays, cancellation of major investments, the loss of sunk costs, or inadequate funding to maintain and operate the assets.

(b) Full funding policy.

The full funding policy (see section 31.4) requires that each useful segment (or module) of a capital investment be fully funded with either regular annual appropriations or advance appropriations. Appendix J elaborates on the full funding concept (see Appendix J section C, Principles of Financing).

Appendix J, Section C lists four principles for financing capital assets. Principle 1, on full funding, states (*italics as in the original*):

Budget authority sufficient to complete a useful segment of a capital project (investment) (or the entire capital project, if it is not divisible into useful

segments) must be appropriated before any obligations for the useful segment (or project) (or investment) may be incurred.

Explanation: Good budgeting requires that appropriations for the full costs of asset acquisition be enacted in advance to help ensure that all costs and benefits are fully taken into account at the time decisions are made to provide resources. Full funding with regular appropriations in the budget year also leads to tradeoffs within the budget year with spending for other capital assets and with spending for purposes other than capital assets. Full funding increases the opportunity to use performance-based fixed price contracts, allows for more efficient work planning and management of the capital project (or investment), and increases the accountability for the achievement of the baseline goals.

When full funding is not followed and capital projects (or investments) or useful segments are funded in increments, without certainty if or when future funding will be available, the result is sometimes poor planning, acquisition of assets not fully justified, higher acquisition costs, cancellation of major investments, the loss of sunk costs, or inadequate funding to maintain and operate the assets.

As also discussed in the 2002 CRS report, Section 010202(A) of the current (June 24, 2002) version of DoD Directive 7000.14-R on budget formulation and presentation states:

It is the policy of the Department of Defense to fully fund procurements that are covered within the procurement title of the annual DoD Appropriations Act. There are 2 basic policies concerning full funding.

1. The first is to provide funds at the outset for the total estimated cost of a given program so that the Congress and the public can be fully aware of the dimensions and cost when the program is first presented in the budget.

2. The second is to provide funding each fiscal year to procure a complete, usable end item. In other words, an end item budgeted in a fiscal year cannot depend upon a future year's funding to complete the procurement. However, efficient production of major defense systems has necessitated two general exceptions to this policy—advance procurement for long lead-time items and advance economic order quantity (EOQ) procurement. EOQ is normally associated with multiyear procurements but can be requested for annualized procurements on an exception basis for unusual circumstances (such as combined parts buys for a block of satellites). Both efforts must be identified in an Exhibit P-10, Advance Procurement, when the Budget Estimate Submission is submitted to OSD and when the President's budget request is submitted to the Congress.

As discussed in the 2002 CRS report, the application of the full funding policy has been affirmed at various times over the last five decades by Congress, GAO, and DoD. For example, in marking up the FY2003 defense appropriation bill (H.R. 5010), the House and Senate Appropriations committees rejected an Air Force proposal to fund a multiyear procurement (MYP) for the C-17 aircraft program using a funding profile that the committees viewed as a form of incremental funding. In its report (H.Rept. 107-532 of June 25, 2002, page 168) on H.R. 5010, the House Appropriations Committee stated:

The Air Force has adopted a budgeting approach for the C-17 that delays the need to request \$1,500,000,000 in budget authority until 2007 and 2008. Instead of following the traditional method of requesting funding equal to the cost of the planes being built, the Air Force has matched its funding request to when payments are due to the contractor. The Air Force calls this change "transformation". The proper term is incremental funding and it is inconsistent with DoD fiscal policy. Although the planes are delivered on the same schedule and at the same cost under either approach, incremental funding allows programs to push off onto future years costs that should be covered now. . . .

Last year, when the Congress was considering multiyear procurement authority for the C-17, the Air Force sought bill language specifically authorizing this new approach. The Congress approved the multiyear, but denied the Air Force's request for special authority. Nevertheless, the Air Force proceeded with the incremental funding and reinterpreted the regulations as permitting this approach. . . .

Therefore, the Committee has included bill language requiring that the fiscal year 2003 C-17 Advance Procurement be used to support the acquisition in fiscal year 2004 of 15 C-17 aircraft (the planned production rate) and directs the Air Force to include the funds to complete the purchase of those 15 C-17s in its 2004 budget submission.

The Committee directs the Under Secretary of Defense (Comptroller) to restructure the outyear funding for the C-17 program to bring it into compliance with the proper use of advance procurement as defined in the FMR. The Committee is fully supportive of the C-17 program and the multiyear procurement of 60 additional airplanes and directs that these changes be implemented in a manner that would not adversely affect the cost or delivery of these planes.

In its report (S.Rept. 107-213 of July 18, 2002, page 147) on H.R. 5010, the Senate Appropriations Committee stated:

The Air Force has not requested sufficient funding in its budget proposal to fully fund the purchase of 15 [C-17] aircraft per year. Instead, it has chosen to request only the amount of funds it expects to obligate each year to start the production of 15 aircraft, and finance the remaining costs in later years. This financing scheme runs counter to the 'full funding' principles which guide Federal Government procurement practice, and thus creates a future liability for the Air Force and Congress. For these reasons, the Committee disapproves the Air Force's C-17 financing proposal.

The conference report (H.Rept. 107-732 of October 9, 2002, page 206) on H.R. 5010 stated:

In the Department of Defense's fiscal year 2003 budget submission, the Air Force did not request a sufficient amount to fully fund the purchase of 15 C-17 cargo aircraft per year. Instead, it requested only the amount of funds it expected to obligate each year to start production of 15 aircraft, and financed the remaining costs in later years. This financing scheme runs counter to the "full funding" principles which guide Federal government procurement practice, and thereby creates a future liability for the Air Force and Congress. For this reason, the conferees disapprove the Air Force's C-17 financing proposal.

On the question of how the Navy's plan to fund the lead DD(X) through the research and development account may have affected the visibility of total costs and annual funding for the DD(X) lead-ship design and construction effort, one basic source of information for Congress on funding for Navy acquisition programs is an annual Navy document entitled *Highlights of the Department of the Navy [fiscal year] Budget*. As suggested by its title, this document, which is about 100 pages in length, is intended to provide Congress with funding information on what the Navy believes to be the most significant elements of its annual budget proposal, including major shipbuilding programs. The FY2005 version of this document presents funding information for a variety of Navy shipbuilding and conversion programs, including CVN-21, SSN-774, DDG-51, LPD-17, LHD-1, SSGN conversion, submarine refueling overhauls, and the LCAC landing craft service life extension program. It does not, however, contain any funding information for the DD(X) program, even though it describes the DD(X) as "a transformational 21st century surface combatant [that] will play a key role in the [Navy's] Sea Power 21 strategic concept."

A second basic source of information for Congress on funding for Navy acquisition programs is an annual DoD document entitled *Program Acquisition Costs By Weapon System*. The FY2005 version of this document presents all DD(X)-related costs in a single research and development funding line, blending lead-ship design and construction funding with other DD(X) research and development funding. The document does not state the total design and construction cost of the lead DD(X), and provides no funding data for any year after FY2005. The FY2005 column reads "Qty 1, Amt \$1,450.6 [million]," which can suggest to the reader, erroneously, that a major portion of the total design and construction cost of the lead DD(X) is to be funded in FY2005, when in fact the FY2005 budget proposal would fund only the first \$221 million, or 8%, of the total design and construction cost of the ship.

A third basic source of information for Congress on funding for Navy acquisition programs are annual DoD documents entitled *Procurement Programs (P-1) and RDT&E Programs (R-1)*. The FY2005 version of the P-1 does not contain any information on the DD(X) program because the FY2005 budget request includes no procurement funding for the DD(X) program.

A computer scan shows that the FY2005 version of the R-1 does not contain any listing for DD(X) or DDX. Research and development costs for the DD(X) program

in this document are instead shown under program element (PE) 0604300N, entitled "SC-21 Total Ship System Engineering." The DD(X) program is the successor to an earlier destroyer program called the DD-21. The DD-21 and a then-projected cruiser called the CG-21 were to make up the SC-21 family of ships, meaning the surface combatants for the 21st Century. The SC-21 acronym has not been in common use for several years, and only observers familiar with these details of the history of the DD-21 program would easily recognize "SC-21 as a reference to the DD(X) program. As with *Program Acquisition Costs By Weapon System*, the entry in the R-1 for the SC-21 Total Ship System Engineering program element presents all DD(X) costs in a single research and development funding line, blending leadship design and construction funding with other DD(X) research and development funding.

Contrary to Navy testimony at the March 30, 2004, hearing before the Projection Forces subcommittee, moreover, the P-1 and R-1 do not contain funding information for any program for any fiscal year beyond FY2005, and do not have a "cost to complete" column for total additional costs beyond FY2005.

A fourth basic source of information for Congress on funding for Navy acquisition programs are annual Navy documents called budget justification books, or J-books for short. Among the J-books is a volume for the Navy's shipbuilding account and 5-volume set for the Navy's research and development account. The FY2005 version of the J-book for the Navy's shipbuilding account provides information on many Navy shipbuilding and conversion programs but does not contain any information on the DD(X) program because the FY2005 budget request includes no procurement funding for the DD(X) program.

The 5-volume J-book for the Navy's FY2005 research and development account contains a total of more than 3,700 pages of information on numerous Navy research and development programs. Various pages in the second and third volumes present funding data, in several cases through FY2009, for PE 0604300N, which in this book is called "DD(X) Total Ship System Engineering." Of the more than 3,700 pages in the 5-volume set, two pages—the single-page Exhibit R-2 and the first page of Exhibit R-2a, which together constitute pages 439-440 of the 1,306-page third volume in the set—show, through FY2009, DD(X) lead-ship design and construction funding separate from funding for other DD(X) research and development work. These two pages do not, however, separate lead-ship design costs from lead-ship construction costs, preventing readers from understanding whether the FY2005 funding request contains funding for design work only, construction work only, or both, and if both, how much funding is requested for each.

Some pages in the 5-volume set have tables presenting DD(X) Total Ship System Engineering Costs that include a column entitled "To Complete" for showing costs beyond the final year that is shown separately in the table. In almost all instances, however, the information in this column simply states "CONT," meaning that there are continued but unspecified costs after the final year that is shown separately. The one exception—the twopage Exhibit R-3, which constitutes pages 444-445 of the third volume—contains a cost to complete column showing a figure for all costs after FY2005. It also states that the total cost (including FY2005 costs) for a line item called "Product Development" under "DD(X) 1 Construction" is \$2.701 billion. This appears to be the total design and construction cost of the lead DD(X), but a reader might not recognize it as such because the line item is labeled "product development" rather than something like "ship design and construction." Computer scans of all 5 volumes of the J-book did not find any other instances where the \$2.701-billion figure appears. (The Navy later informed CRS that the cost is about \$2.8 billion, suggesting that the figure has grown by something like \$100 million since the time that the J-books were prepared.) Exhibit R-3, moreover, does not detail how much of this total cost occurs in any individual year beyond FY2009.

In summary, the total estimated design and construction cost of the lead DD(X), and annual funding specifically for the lead-ship design and construction effort, are not presented in the *Highlights* book, *Program Acquisition Costs By Weapon System*, the P-1, the R-1, or the J-book for the shipbuilding account. Readers scanning these documents for the purpose of identifying DoD acquisition programs that may merit oversight attention for FY2005 would not encounter the total design and construction cost of the lead DD(X) or specific cost annual funding figures for the lead-ship design and construction effort, arguably reducing the likelihood that readers would identify the lead DD(X) as an item potentially meriting oversight attention.

Of the reference sources discussed above, only one—the third volume of the 5-volume Navy J-book for the research and development account—separates DD(X) lead ship design costs from construction costs or presents the total design and construction cost of the lead DD(X). The 1,306-page document presents this information on 4 pages. The total lead-ship design and construction cost figure is presented in an

exhibit that uses a potentially confusing line item label. None of the reference sources, including the 5-volume J-book for the research and development account, appear to separate lead-ship design costs from lead-ship construction costs. Most of the reference sources, if they present figures on DD(X) research and development funding, blend lead-ship design and construction costs with general DD(X) research and development costs.

Skeptics could argue that this approach to presenting cost data for the lead DD(X), which can be viewed as a result of the Navy's plan to fund the lead DD(X) through the research and development account rather than the shipbuilding account, has resulted in limited awareness that the total cost of the lead DD(X) is \$2.8 billion, that only about 8% of the lead ship's total design and construction cost is requested in FY2005, and that the lead ship is to be funded through a stream of annual funding increments stretching out to FY2011, at which point, under the Navy's plan, DD(X)s numbers 2 through 10 are to be fully funded and the Navy would be requesting full funding for DD(X)s numbers 11 and 12.

Mr. BARTLETT. You mention a number of options for supporting the industrial base, including the option of procuring additional Coast Guard cutters. Please explain what this option is about.

Mr. O'ROURKE. This option would involve accelerating procurement of new cutters to be procured under the Coast Guard Deepwater acquisition program. It could also involve expanding the total number of cutters to be procured under the program.

The Coast Guard Deepwater program is a 22-year program for replacing and modernizing the Coast Guard's aging fleet of deepwater-capable cutters, patrol boats, and aircraft. The program envisages procuring, among other things,

- **8 new National Security Cutters, or NSCs**, nominally 421 feet long and displacing about 3,900 tons (i.e., ships roughly analogous to the Coast Guard's current high-endurance cutters), to be delivered between 2006 and 2013; and
- **25 new Offshore Patrol Cutters, or OPCs**, nominally 341-feet long and displacing about 2,900 tons (i.e., ships roughly analogous to the Coast Guard's current medium-endurance cutters), to be delivered between 2012 and 2022.

Some observers of the Deepwater program are interested in the idea of compressing the Deepwater acquisition period from 20 years to as few as 10 years. This idea, which would accelerate into earlier years the procurement of cutters (and aircraft) now planned for later years, would increase the annual funding requirements of the Deepwater program in the nearer term but reduce its total cost, in part by permitting the acquisition of new cutters (and aircraft) at more efficient annual rates. In March 2003, the Coast Guard submitted a report to Congress stating that compressing the Deepwater acquisition period to 10 years was feasible, that it would increase Deepwater acquisition costs over the 5-year period FY2005-FY2011 by about \$4.7 billion in then-year dollars, and that it would reduce total Deepwater acquisition costs from \$16.022 billion in then-year dollars to \$11.473 billion in then-year dollars—a reduction of \$4.549 billion in then-year dollars, or 28.4%.

Supporters of the Coast Guard may also be interested in expanding the number of cutters to be procured under the Deepwater program. They could argue that current planned procurement totals reflect projections of future Coast Guard mission loads that were made prior to the terrorist attacks of September 11, 2001. Following the terrorist attacks, they could argue, the Coast Guard's homeland security responsibilities have been significantly expanded while requirements for performing non-homeland security missions (such as fisheries enforcement) have not decreased. As a result, they could argue, the number of cutters to be procured under the Deepwater program is now insufficient and should be increased, perhaps substantially.

A September 2003 report on the Deepwater program by the RAND Corporation states:

The Coast Guard's ambitious effort to replace and modernize many of its ships and air vehicles—conceived and put in motion before the September 11, 2001 terrorist attacks and officially known as the Integrated Deepwater System program—will not provide the USCG [U.S. Coast Guard] with adequate assets and capabilities to fulfill traditional and emerging mission demands. To satisfy these demands, the USCG will need the capabilities of twice the number of cutters and 50 percent more air vehicles than it has been planning to acquire over the next two decades. It cannot gain these capabilities merely by buying the assets in the current program over 10 or 15 years instead of over 20. Rather, it can only gain these capabilities by acquiring significantly more cutters, unmanned air vehicles and helicopters than are in the current acquisition program, or by mixing into the program

other platforms and technologies that provide the same or additional capabilities.

(Birkler, John, *et al.* *The U. S. Coast Guard's Deepwater Force Modernization Plan: Can It Be Accelerated? Will It Meet Changing Security Needs?* Santa Monica (CA), RAND, 2003. (National Security Research Division, MR-3128.0-USCG, September 2003, Prepared for The United States Coast Guard) p. xi.)

The table below compares quantities of NSCs and OPCs to be procured under the Coast Guard's current Deepwater plan with RAND's estimate (based in part on work done by the Center for Naval Analyses, or CNA) of the number of NSCs and OPCs that would need to be procured to fully meet traditional and emerging Coast Guard mission demands:

Table 3. Coast Guard Deepwater Cutter Procurement Quantities

Type	Current Deepwater plan	Number needed to fully meet traditional mission demands (RAND estimate)	Additional number needed to fully meet emerging mission demands (CNA estimate)	Total number needed to fully meet traditional and emerging mission demands (RAND + CNA)
NSC	8	35	9	44
OPC	25	36	10	46

Source: Birkler, John, *et al.* *The U.S. Coast Guard's Deepwater Force Modernization Plan: Can It Be Accelerated? Will It Meet Changing Security Needs?* Santa Monica (CA), RAND, 2003. (National Security Research Division, MR-3128.0-USCG, September 2003, Prepared for The United States Coast Guard) Table 4-2.

The 90 NSCs and OPCs shown in the final column of table 6 have a combined lightship displacement equal to that of 20.7 DD(X)s. Similarly, about 4 NSCs or about 5 OPCs would have a light-ship displacement comparable to that of 1 DD(X). Procuring 4 or 5 NSCs and OPCs per year might thus generate about as much shipyard construction work as procuring 1 DD(X) per year, and procuring 8 to 10 NSCs and OPCs per year might generate about as much shipyard construction work as procuring 2 DD(X)s per year. Building NSCs and OPCs, however, would likely require a somewhat different mix of shipyard construction skills than building DD(X)s.

The Coast Guard estimates that NSCs will cost roughly \$210 million each to procure. Based on this figure and on the relative light-ship displacements of the NSC and OPC, OPCs might cost roughly \$152 million each to procure. Using these figures, procuring 4 or 5 NSCs and OPCs would cost less than procuring a single DD(X).

Northrop Grumman's Ship Systems (NGSS) division, which includes Ingalls, is the sole provider, along with Lockheed Martin, of the team selected by the Coast Guard as the prime contractor for the Deepwater program. Accelerating and expanding procurement of Deepwater cutters could thus provide significant amounts of additional shipbuilding work to NOC/Ingalls. If the total number of cutters to be procured is expanded beyond the currently planned figure, it might also be possible to award some cutter construction contracts to GD/GD/BIW, if the various parties now involved in the Deepwater program could agree to the idea.

The Coast Guard is part of the new Department of Homeland Security (DHS). Coast Guard programs are therefore funded primarily through the DHS budget rather than the DoD budget. Accelerating and expanding the cutter portion of the Deepwater program could therefore require close coordination between DHS and DoD, and between the various congressional committees that oversee the Coast Guard and Navy budgets.

Mr. BARTLETT. You have raised the issue of the analytical basis for the LCS program. The Navy says they have done a lot of analysis on the program. What's the issue here?

Mr. O'ROURKE. The issue centers on the kind of analysis the Navy has performed in support of the LCS concept. Prior to announcing the LCS program (along with the DD(X) and CG(X) programs) in November 2001, the Navy apparently did not conduct a formal analysis called an Analysis of Multiple Concepts (AMC)—to demonstrate that a ship like the LCS would be more cost-effective than potential alternative approaches for performing the LCS's stated missions. An AMC is often performed before starting a major acquisition program to help identify or verify the most cost-effective approach.

Potential alternative approaches for performing the LCS's stated missions include (1) manned aircraft (both helicopters and fixed-wing aircraft), (2) submarines equipped with UVs, (3) a larger (perhaps frigate-sized) surface combatant equipped with UVs and operating further offshore, (4) a non-combat littoral support craft (LSC) equipped with UVs, or (5) some combination.

In testimony before this subcommittee in April 2003, the Navy acknowledged that, on the question of what would be the best approach to perform the LCS's stated missions, "The more rigorous analysis occurred after the decision to move to LCS."

In terms of the analytical basis for the LCS program, there are three key questions:

- Is there an emerging littoral threat that requires a response beyond what is in the plan of record?
- If so, what should that response be—i.e., of the various alternative approaches available for addressing this threat, which is the best or most promising?
- If a small, fast surface combatant with UVs is the best or most promising approach, what, exactly, should the ship look like, and what should be its concept of operations?

The Navy appears to have done analysis on the first question of whether there is an emerging threat that will require additional littoral warfare capabilities. Robert Work at the Center for Strategic and Budgetary Assessments (CSBA) has raised a question in his writing about whether the Navy's conclusion on this point is valid, but the Navy seems to have addressed the issue analytically.

The Navy also appears to have done analysis, and is doing more analysis, on the third question, which focuses on refining the details of the general approach that has been selected to address that threat.

What the Navy apparently did not do, prior to announcing the LCS program, is conduct a rigorous AMC to address the middle question, which asks, if there is an emerging threat, what general approach should be used to address it? Instead of rigorously comparing a small, fast surface combatant to alternative approaches for performing the littoral missions in question, there appears to have been an a priori preference for the small, fast surface combatant.

In defending the analytical basis of the LCS program, Navy officials have stated that the Navy has conducted considerable analysis in support of the program. This comment appears true enough, but the analysis being referred to appears to be on the first and third questions, and not the middle one—which is a crucial question in the acquisition process.

The Navy can show through analysis that adding LCSs to the fleet would increase its ability to deal with littoral threats. But other potential additions to the fleet could do this as well. What the Navy has not shown through formal, rigorous analysis is that the increase provided by adding LCSs is greater than the increase that would be realized by investing a similar amount of funding in alternative approaches. That's the question that would have been addressed by a rigorous AMC. The LCS might in fact be better than the alternatives, but the Navy apparently cannot show that it reached this conclusion through a rigorous, unbiased examination of the issue.

Supporters argue that the LCS builds on about 4 years of analytical work on small, fast surface combatants done at the Naval War College, responds to the Navy's need for forces that can operate in littoral waters against enemy anti-access and area-denial forces, and is consistent with the concept of network-centric warfare, the growing importance of UVs, and the need for more affordable Navy ships. They can also argue that the Navy in the past has built prototype ships without having first done an AMC.

Critics could argue that these arguments may be true but do not demonstrate that the LCS is the best or most promising approach for performing the LCS's stated missions. Absent a formal AMC, they could argue, the Navy has not, for example, shown why it would be necessary or preferable to send a small and potentially vulnerable manned ship into heavily defended littoral waters to deploy UVs when UVs could also be launched from aircraft or from larger ships operating further offshore. The LCS, critics could argue, is being proposed on the basis of "analysis by assertion." They can argue that while it may be acceptable to build one or a few ships as operational prototypes without first having analytically validated the cost-effectiveness of the effort, it is quite another thing to propose a 50- to 60-ship program costing at least \$14 billion without first examining through rigorous analysis whether this would represent the most cost-effective way to spend such a sum.

One Navy official reportedly has recently argued that the LCS can be justified on the basis of operational lessons learned over the past 14 years:

"Since Desert Storm [in 1991], we have deployed carrier battle groups and amphibious ready groups every year consistently in the gulf," said Vice Adm. Phillip Balisle, commander of Naval Sea Systems Command, on April 6. "For 14 years, we have collected those lessons learned from every battle group and determined very clearly what is required in the littorals to do the operations we are now being asked to do." . . .

Balisle, speaking to defense industry representatives at the Navy League's Sea-Air-Space Symposium in Washington, D.C., said the real-world lessons learned provide "a clarity that might be even better than a study we can conduct here in Washington, D.C."

"Once you have that insight, it is only good business to take advantage of it and move as quickly as possible to bring the capability to the warfighter," he said. "I think that's where the taxpayers want us to go to." (Brown, David. Admiral Sticks Up For Littoral Combat Ship. NavyTimes. com, April 9, 2004.)

In response, skeptics could note that from early 1991 through November 2001—that is, for about 10 and one-half of the 13 (not 14) years since Desert Storm ended in March 1991—Navy acquisition plans did not include a small, fast ship like the LCS, and that Navy officials during this period (and particularly during the late 1990s) politely resisted proposals for acquiring such a ship. Skeptics could ask which judgment should be accorded greater weight—the 10 and one-half years of judgment from Navy officials that such a ship was not needed, or the more recent 2 and one-half years of judgment from Navy officials that such a ship is needed.

Skeptics could also argue that in 1999 and 2000, Navy officials argued repeatedly and forcefully, based on decades of operational experience, that the Navy training range on the Puerto Rican island of Vieques was unique, irreplaceable, and critical to the readiness of deploying Atlantic Fleet naval forces, but that the judgment of these officials was effectively overturned by a study on Vieques ordered by the Secretary of the Navy and performed by the Center for Naval Analyses (CNA), an organization based in the Washington, DC area. The study identified a potential new strategy for training deploying Atlantic Fleet naval forces that relied on using several alternative sites rather than the single site of Vieques. The Navy closed the Vieques range, withdrew from the island at the end of April 2003, and implemented a new training strategy for deploying Atlantic Fleet forces derived from the approach identified in the CNA report. Navy officials in recent months have expressed satisfaction with this new approach, saying that it provides training that is equal in quality to, and in some respects better than, the training that was provided at Vieques. The experience with the Vieques range, skeptics could argue, demonstrates that studies done in the Washington, DC area can be important in either confirming or overturning strongly held views among Navy officials that are said to be based on past operational experience.

Mr. BARTLETT. The Navy has argued strongly in favor of its rapid acquisition schedule for the LCS. What's the potential downside of this approach?

Mr. O'ROURKE. Potential downsides of the Navy's proposed rapid acquisition schedule include management of program technology risk and the potential effect on congressional oversight of not only the LCS program but possibly other future DoD acquisition programs as well.

Technology risk. One potential downside is that the proposed rapid acquisition schedule may not provide the Navy with sufficient time to adequately retire all technology risks associated with mission modules intended for use aboard the initial flight (i.e., version) of the LCS. A March 2004 General Accounting Office report on major DoD acquisition programs stated:

The LCS program has 22 mission related critical technologies, and is scheduled to enter system development with 10 of those technologies fully mature. Nine of the remaining 11 technologies will be close to reaching full maturity by the start of system development. The technologies that have not reached maturity affect all 3 of the littoral warfare missions—mine warfare, antisubmarine warfare, and surface warfare. . . . Six technologies are not expected to mature until after the design review.

Four critical technologies act as platforms, which employ other technologies as payloads. These platforms will support operations across the three littoral warfare missions—mine warfare, antisubmarine warfare, and surface warfare. Three of these technologies—the MH-60R, MH-60S, and Vertical Takeoff and Landing Tactical Uninhabited Aerial Vehicle—have reached acceptable levels of technology maturity or they will do so by program development. One technology, the Spartan uninhabited surface vehicle, is not expected to be fully mature until the lead ship award date. . . .

Several additional systems will operate independent of these platforms. These include three uninhabited undersea vehicles for mine warfare that have been used on other naval vessels. Also in development are two distributed sensing systems that will not be mature by system development. A final technology under consideration is Netfires, a missile system being developed by the Army for FCS. This system will not be fully mature by system development. No fallback technologies for any systems have been identified due primarily to the redundant capabilities among the mission modules. . . .

In commenting on a draft of this assessment, the program office stated that the first two LCS ships would employ mission modules composed of existing technologies including, but not limited to, those discussed in this report. Future LCS vessels will utilize newly developed mission module packages and will leverage lessons learned from the initial two vessels, including risk mitigation for new technologies such as advanced materials and nontraditional hull types.

The program office also stated that an important aspect of the LCS program is the development of open interfaces between the ship and the mission modules. LCS modular mission payloads will plug into an open modular architecture through a set of standard systems interfaces. This will mitigate the potential that a single mission package system could negatively affect ship design viability and allow for rapid introduction of new capabilities to the Fleet.

(U.S. General Accounting Office. Defense Acquisitions: Assessments of Major Weapon Programs. Washington, 2004. (Report to Congressional Committees, March 2004, GAO-04-248) pp.81-82.)

Congressional oversight. Skeptics, while acknowledging that the LCS program's rapid acquisition strategy is consistent with DoD acquisition reform, could question whether such a strategy is needed to meet an urgent Navy operational need. They could argue the following:

- Recent major U.S. military combat operations—in Kosovo in 1999, in Afghanistan in 2001-2002, and in Iraq in early 2003—suggest that the Navy faces no immediate crisis in littoral-warfare capabilities.
- If improved enemy littoral anti-access/area-denial capabilities do emerge, they are likely to do so gradually, over a period of many years, as potential adversaries incrementally acquire and learn to use such capabilities, permitting time for a less-hurried start to LCS procurement; and
- The Navy's argument about having an urgent operational need for LCSs is undercut by its own procurement profile for the LCS program, which would procure the planned total of 56 ships over a relatively long 15-year period, with the final ships in the program not delivered until about 2021.

Some observers believe that the LCS program's rapid acquisition strategy is motivated primarily not by concerns for the Navy's near-term littoral warfare capabilities, but rather by one or more of the following four factors, all of which are essentially political in nature rather than operational:

- A belief that LCS production must start before there is a change in administration, which supports the LCS.
- A belief that funding to begin LCS production must be secured before there is a change in the Chief of Naval Operations, who is perhaps the leading supporter of the LCS.
- A belief that LCS procurement must not start after DD(X) procurement, which, if it were to occur, could provide DD(X) supporters with an opportunity to seek the termination of the LCS program.
- A desire to limit congressional review of the LCS program prior to seeking congressional approval for starting procurement.

With regard to the last of these possibilities, some observers believe that Navy officials adopted a rapid acquisition strategy for the LCS program in part to limit the amount of time available to Congress to assess the merits of the LCS program and thereby effectively rush Congress into approving the start of LCS procurement before Congress fully understands the details of the program. In connection with this possibility, it can be noted that announcing the LCS program in November 2001 and subsequently proposing to start procurement in FY2005 resulted in a situation of Congress having only three annual budget-review seasons to learn about the new LCS program, assess its merits against other competing DoD priorities, and make

a decision on whether to approve the start of procurement. These three annual budget-review seasons would occur in 2002, 2003, and 2004, when Congress would review the Navy's proposed FY2003, FY2004, and FY2005 budgets, respectively. Congress' opportunity to conduct a thorough review of the LCS program in the first two of these three years, moreover, may have been hampered:

- **2002 budget-review season (for FY2003 budget).** The Navy's original FY2003 budget request, submitted to Congress in February 2002, contained no apparent funding for development of the LCS. In addition, the Navy in early 2002 had not yet announced that it intended to employ a rapid acquisition strategy for the LCS program. As a result, in the early months of 2002, there may have been little reason within Congress to view the LCS program as a significant FY2003 budget-review issue. In the middle of 2002, the Navy submitted an amended request asking for \$33 million in FY2003 development funding for the LCS program. Navy officials explained that they did not decide until the middle of 2002 that they wanted to pursue a rapid acquisition strategy for the LCS program, and consequently did not realize until then that there was a need to request \$33 million in FY2003 funding for the program. By the middle of 2002, however, the House and Senate Armed Services committees had already held their spring FY2003 budget-review hearings and marked up their respective versions of the FY2003 defense authorization bill. These two committees thus did not have an opportunity to use the spring 2002 budget-review season to review in detail the Navy's accelerated acquisition plan for the LCS program or the supporting request for \$33 million in funding.
- **2003 budget-review season (for FY2004 budget).** To support a more informed review of the LCS program during the spring 2003 budget-review season, the conferees on the FY2003 defense authorization bill included a provision (Section 218) requiring the Navy to submit a detailed report on several aspects of the LCS program, including its acquisition strategy. In response to this legislation, the Navy in February 2003 submitted a report of 8 pages in length, including a title page and a first page devoted mostly to a restatement of Section 218's requirement for the report. The House and Senate Armed Services committees, in their reports on the FY2004 defense authorization bill, have expressed dissatisfaction with the thoroughness of the report as a response to the requirements of Section 218. It is thus not clear whether the defense authorization committees were able to conduct their spring 2003 budget-review hearings on the FY2004 budget with as much information about the LCS program as they might have preferred.

Only the 2004 budget-review season on the Navy's proposed FY2005 budget now remains for further reviewing and considering the merits of the LCS program prior to deciding whether to approve the start of LCS procurement.

For much of the time that Congress has been aware of the LCS program, the Navy has not been able to provide specific answers to questions about the program. Because the LCS program is a spiral development effort, answers to some of these questions may be determined over time.

An important potential oversight issue for Congress is whether the combination of spiral development and a rapid acquisition schedule permits DoD to gain approval for starting a major acquisition program without having to provide Congress with much specific information about that program. This issue is not necessarily limited to the LCS: If Congress approves the LCS program as proposed, DoD may view it as a precedent for proposing other major acquisition programs in a similar manner.

Mr. BARTLETT. What would be the potential advantages of building a few LCSs and then evaluating them for a while before deciding on whether to put the LCS into larger-scale series production?

Mr. O'ROURKE. This approach was proposed by the Center for Strategic and Budgetary Assessments (CSBA) in a report issued in May 2003 on anti-access/area-denial challenges and in a subsequent report issued by CSBA in February 2004 on the LCS program. CSBA and other supporters of this approach could argue that it could have the following advantages:

- Reserving judgment on whether to approve the LCS program as a series-production effort would provide DoD with time to confirm the emergence of the projected enemy littoral anti-access/area-denial systems that the LCS is intended to counter.

- Given the significant differences between the LCS and past Navy surface combatants, reserving judgment on whether to approve the LCS program as a series-production effort would provide DoD with time to conduct realworld tests and exercises involving actual LCSs for verifying the projected performance attributes of the LCS and gaining a better understanding of how LCSs might contribute to naval operations.
- Reserving judgment on whether to approve the LCS program as a series-production effort would provide DoD with an opportunity to perform a rigorous, thorough analysis of multiple concepts (AMC) for performing littoral-warfare missions that is not biased by a pre-existing decision that a series-production LCS program is the best or most promising approach.

Mr. BARTLETT. You mention the possibility of a reduction in the submarine force-level goal. When might this happen, and what would be the implications?

Mr. O'ROURKE. DoD is conducting a study on undersea warfare that has the potential for changing the attack submarine force-level requirement. This study is reportedly an extension or follow-on to an earlier DoD study on the same topic. The results of the earlier study effort were not announced. Press reports suggest that the results of the follow-on study could be announced at the end of this year or sometime next year.

There is concern among submarine supporters that Navy or DoD studies on undersea warfare could lead to a reduction to the 55-boat attack submarine force-level requirement that was established in the 2001 QDR. They are concerned, for example, about a study they understand to have been done last year or early this year by N81—the assessment office of the Resources, Requirements & Assessment Division (N8) within the Office of the CNO. This study, they understand, concluded that the attack submarine force level requirement can be reduced to 37 boats if the day-to-day intelligence, surveillance, and reconnaissance (ISR) missions of attack submarines are set aside for force-planning purposes and the force-level requirement is established solely on the basis of the number of attack submarines needed for warfighting.

A total of 37 boats might be understood to include 4 converted Trident attack submarines and 33 other attack submarines. Reducing the attack submarine force-level goal to something like 37 boats would permit the *VIRGINIA*-class submarine procurement rate to remain at 1 per year for many years to come, or even permit it to be reduced to something less than 1 per year for some number of years.

Compared to the Navy's current plan to increase *VIRGINIA*-class procurement to 2 per year starting in FY2009, keeping *VIRGINIA*-class procurement at 1 per year for many years to come, or reducing it to something less than 1 per year for some number of years, could permit the Navy to apply increased amounts of funding to other programs. Submarine supporters are concerned that the Navy or DoD is seeking a reduction in the attack submarine force-level goal to provide a rationale for maintaining *VIRGINIA*-class procurement at 1 per year indefinitely, or for reducing it to less than 1 per year, so as to make additional funding available for procuring surface ships such as the DD(X) and LCS.

Mr. BARTLETT. You discuss the option for a future Congress to procure a second *VIRGINIA*-class submarine in either FY07 or FY08. Is that option still open?

Mr. O'ROURKE. Although the FY2004 DoD appropriation bill and report language on Congress' decision on *VIRGINIA*-class multiyear procurement (MYP) may effectively prohibit the Navy from requesting funding in its budgets for a second boat in FY2007 or FY2008, the bill and report language do not necessarily prevent a future Congress from funding a second boat in FY2007 or FY2008 that the Navy has not requested funding for, if a future Congress wants to fund such a boat and determines that there is sufficient funding available for the purpose. A future Congress could alter the *VIRGINIA*-class MYP authority to permit a second boat procured in FY2007 or FY2008 to be covered under the MYP contract. Alternatively, it might be possible to build a second boat procured in FY2007 or FY2008 under a non-MYP contract (i.e., a regular, single-boat construction contract) that is separate from the MYP contract.

In restructuring its budget to support the procurement of 5 *VIRGINIA*-class submarines in FY2004-FY2008, the Navy eliminated advance procurement (AP) funding in FY2005-FY2007 that would support the construction of long-leadtime nuclear-propulsion components for second boats procured in FY2007 and FY2008. The absence of AP funding in FY2005-FY2007, however, would not prevent a future Congress from procuring a second boat in either year. It simply means that the interval between the year of procurement and the year the boat enters service would be 2 or 3 years longer than usual (i.e., 8 or 9 years rather than the usual 6 years).

Congress can, and has, fully funded the procurement of nuclear-powered ships for which there was no prior-year AP funding for long-leadtime components. Doing so involves funding the entire procurement cost of the ship in the year of procurement, including the funding that normally would have been provided in prior years as AP funding.

For example, Congress in FY1988 fully funded the procurement of the aircraft carriers CVN-74 and CVN-75 as a two-ship buy, even though there had been no prior-year advance procurement funding for the ships. Following Congress' decision in FY1988, construction of long-leadtime components began right away, construction of CVN-74 itself began about two years later, and construction of CVN-75 began about two years after that. CVN-74 entered service in 1995, 7 years after the year of procurement (a typical time to build a carrier), and CVN-75 entered service in 1998, 10 years after the year of procurement.

Mr. BARTLETT. You mention the possibility that procurement plans for amphibious ships and maritime prepositioning ships might change. Why is that so, and how might they change?

Mr. O'ROURKE. The Navy and Marine Corps are developing a new operational concept, called sea basing, under which expeditionary operations against inland objectives would be launched, directed, and supported directly from ships at sea. This differs from the current operational concept, under which an intermediary land base, usually on or near the shore, is established as the basis for conducting operations against inland objectives. DoD has expressed interest in sea basing as a potential joint operating concept.

Under the sea basing concept, functions previously performed by the intermediary land base, including command and control, fire support, and logistics, would now be performed by the amphibious and maritime prepositioning ships that make up the sea base. As a consequence, these ships may need to incorporate capabilities that differ from those of today's amphibious and maritime prepositioning ships. In addition, the Navy is studying potential sea base configurations involving various combinations of amphibious and maritime prepositioning ships, raising the possibility that currently planned procurement quantities for these ships may not match numbers that may be required for implementing sea basing. Both ship designs and ship procurement quantities might therefore change.

The sea basing concept appears to be contributing to a current DoD study on future U.S. options for conducting forcible-entry operations. The forcible entry options study consequently has the potential for changing DoD plans for procuring amphibious and maritime prepositioning ships. Ship types potentially affected include San Antonio (LPD-17) class amphibious ships, LHA(R)/LHX-type amphibious assault ships, Maritime Prepositioning Force (Future) (MPF(F)) ships, and Maritime Prepositioning Force (Aviation variant) (MPF(A)) ships. Among other things, the forcible entry options study has the potential for reducing currently planned or projected numbers of LPD-17 class and LHA(R)/LHX-type ships and increasing currently planned or projected numbers of MPF(F) and MPF(A) ships. Some trade studies now being carried out in support of the forcible entry options study, for example, include options for procuring as few as 8 LPD-17s, rather than the total of 12 now planned, and for procuring increased numbers of MPF(F) ships instead.

MPF-type ships are likely to be based on commercial-type hull designs and be built to a lower survivability standard than LPD-17s and LHA(R)/LHX-type amphibious ships. Navy officials have stated that they view MPF-type ships as being complements to, and not substitutes for, LPD-17s or LHA(R)/LHX-type ships. Navy officials have not, however, stated what preferred mix of amphibious and MPF-type ships they see emerging from the sea basing concept.

QUESTIONS SUBMITTED BY MR. TAYLOR

Mr. TAYLOR. For the record, could I ask folks at David Taylor to supply me the five most recent things that they have done that have actually been transferred, either to a naval vessel or a commercial vessel? In technologies?

Secretary YOUNG. The following examples describe the five most recent technologies actually transferred to naval or commercial vessels by the David Taylor Model Basin, Naval Surface Warfare Center, Carderock Division (NSWCCD). While a number of NSWCCD technologies are presently being integrated into various naval ship programs, these examples have been incorporated into ships presently in service, under construction, or in design.

1. ADVANCED ENCLOSED MAST SENSOR (AEM/S) SYSTEM—The AEM/S System is a lightweight, corrosion resistant structure constructed of state-of-the-art fiber-reinforced composite materials that houses surface ship high-performance ship

radar and communication equipment. This technology was successfully demonstrated in *USS RADFORD* (DD 968) and transitioned into the *SAN ANTONIO* (LPD 17) Class of amphibious transport dock platforms. The AEM/S technology led to further transition of advanced composite materials into the integrated deckhouse on the Future Surface Combatant DD(X).

2. **TWISTED RUDDER**—Drydock inspection of *ARLEIGH BURKE* (DDG-51) Class ships indicated severe rudder erosion due to cavitation. Periodic repair or replacement of the eroded rudders increases the maintenance cost and decreases ship operation time. Furthermore, cavitation can cause an increase in rudder drag, ship hull vibration, and radiated noise. Using recent advances in computational fluid mechanics, NSWCCD developed a rudder that is twisted along its span to align with the onset flow angle induced by the propeller swirl. Model tests at Navy's Large Cavitation channel showed the rudder cavitation problem greatly reduced by a twisted rudder when compared with a conventional rudder. The technology was successfully tested in *USS BULKELEY* (DDG-84), raising the ship speed by 23% before cavitation onset. The twisted rudders technologies have been approved for DDG-103 and following ships.

3. **TUMBLEHOME HULL DESIGN DEVELOPMENT AND TESTING**—The tumblehome hull design is critical to meeting low radar cross-section signature objectives for the Future Surface Combatant DD(X). NSWCCD hydrodynamics and signatures expertise have been employed in the development of this cutting edge technology. The DD(X) design is using a combination of NSWCCD engineering and scale physical models to establish and validate seakeeping, intact and damage stability, dynamic stability, resistance and propulsion parameters, and radar cross-section. The physical modeling being done in the Center's hydrodynamic facilities will verify the validity of the novel tumblehome topside design. The DD(X) design, including the tumblehome hull, has recently completed preliminary design review.

4. **MODULAR ISOLATED DECK STRUCTURES (MIDS)**—The MIDS has been incorporated into the *VIRGINIA* (SSN 774) Class submarine to facilitate cost effective construction and to isolate equipment, machinery, and sailors from the damaging effects of underwater explosions and external shock effects. This technology was developed to allow the mounting of commercial off-the-shelf equipment inside submarines, yet still maintain a battle worthy design. Further refinement of this design methodology is being considered for the Future Surface Combatant DD(X) and the Future Aircraft Carrier CVN 21.

5. **STERN FLAP**—A stern flap is an extension of the hull bottom surface aft of the transom set at a fixed angle. It is a relatively small appendage, built of plate, welded to the transom. Stern flaps have been proven to reduce propulsive power and exhaust emissions, and to foster significant fuel cost savings, while increasing both ship speed and range. They have been used to provide for a better balance between the ship's power requirement and engine operating envelope, increasing the interval between engine overhauls, and extending the service life of the propulsion machinery. Flaps also reduce propeller loading, cavitation, vibration, and noise tendencies. Stern flaps are relatively inexpensive to back-fit, and are essentially zero cost on new designs. Stern flaps were successfully tested during trials on *OLIVER HAZARD PERRY* (FFG 7) Class, *SPRUANCE* (DD 963) Class, non-combatant US Coast Guard (USCG) cutters and patrol boats. The NSWCCD stern flaps are installed on 93 active USN and USCG ships (accumulating over 350 ship-years service and over \$37 Million in fuel savings), with an additional 90 vessels scheduled for flap installations.

Mr. TAYLOR. The DD(X) Destroyer program seeks to introduce new technologies and a new platform design for a new class of Destroyers for the Navy. What is the main mission that the DD(X) will be designed to accomplish?

Secretary YOUNG. DD(X) is a multi-mission platform focused on delivering precision strike and volume fires. Through robust signature control, high-levels of survivability and strong self-defense systems, DD(X) will maintain persistent presence in the littorals to deliver its fires in support of joint and coalition forces ashore.

Mr. TAYLOR. Given the current emphasis on a "capabilities-based" requirements process, have you considered the potential of meeting this mission requirement with other systems available to the Department of Defense?

Secretary YOUNG. The DD(X) Operational Requirements Document (ORD) was recently reviewed by the Joint Staff under the new capabilities-based requirements process or Joint Capability Integration and Development System (JCIDS). The Joint Requirements Oversight Council endorsed the Navy's DD(X) solution by approving the DD(X) Operational Requirements Document (ORD) on February 23, 2004. Prior to introduction into the Joint Review process, the Navy conducted the Spiral Development Review, revalidating the 1998 Surface Combatant-21 Cost and Operational

Effectiveness Analysis (COEA) that analyzed options to fill the naval fires capability gap.

Mr. TAYLOR. Understanding the need to introduce new technologies to the Fleet in a timely manner, the Committee is concerned that the sheer number of these new technologies, along with the concurrent integration onto the ship, will require an expansion of the development program. Are you comfortable with the aggressive development plans for this ship?

Secretary YOUNG. At ship installation in 2008-2009, the critical milestone for technology maturation in a shipbuilding program per DOD 5000.2 instruction, all DD(X) systems will be at an appropriate maturity level. Furthermore, the DD(X) program employs design budgeting to provide for incorporation of enabling design decisions prior to the Critical Design Review (CDR) scheduled for July 2005 without significant impact to the baseline design.

Mr. TAYLOR. Have you performed an in-depth requirements analysis for the DD(X) since signing the Mission Needs Statement in 1995 and the introduction of the Littoral Combat Ship (LCS) to the Navy's plans?

Secretary YOUNG. Following the Mission Need Statement of 1995, the Navy conducted an extensive two year study to examine the mission need and cost-capability trades associated with surface combatants. This study was called the SC-21 Cost and Operational Effectiveness Analysis (COEA) and was completed in 1998. During the DD21 program restructure to DD(X) in 2001, the Office of Naval Intelligence (ONI) updated the DD(X) System Threat Assessment Report (STAR). Published February 2003, the new STAR revalidated the DD(X) threat set predicted in the 2015 littorals (non-nuclear submarines, mines, swarming small boats, generational advances in anti-ship cruise missiles, proliferation of former Soviet Union torpedo technology and information warfare). The Spiral Development Review, conducted in conjunction with DD21 restructure to DD(X) (January-July 2002) revalidated both the SC-21 Mission Need Statement (MNS) and the SC-21 Cost and Operational Effectiveness Analysis (COEA), specifically differentiating between DD(X) and Littoral Combat Ship missions in littoral regions.

Mr. TAYLOR. Mr. Secretary, you have recently announced your intention to award the construction of ships two through six to a mixture of two different shipyards. Please provide us an update on your contracting strategy.

Secretary YOUNG. The DD(X) Phase IV Acquisition Strategy provides the acquisition and contracting approval for the detail design and construction of DD(X) ships. The Navy's intention is to contract with the DD(X) Design Agent (Northrop Grumman Ship Systems (NGSS)) as the single source for detail design and system integration efforts using a Cost Plus Award Fee (CPAF) contract. The Award Fee will incentivize timely performance, involvement of the National Team, and quality of design. This strategy is intended to maintain total ship engineering and design integrity, enable DD(X) schedule objectives to be met, and protect the viability of the surface combatant shipbuilding industrial base. Ship construction contracts will be allocated equally between NGSS and General Dynamics Bath Iron Works (BIW) for the first six ships and will be Cost Plus Incentive Fee contracts.

Mr. TAYLOR. The Committee is concerned that the Navy has increased its use of sole source contracting options, especially in the area of shipbuilding. What is your rationale for pursuing a directed two-shipyard sole source contracting strategy for DD(X)?

Secretary YOUNG. The acquisition strategy is intended to maintain total ship engineering and design integrity, enable DD(X) schedule objectives to be met, and protect the viability of the surface combatant shipbuilding industrial base. Analysis conducted by the Navy in conjunction with its Phase III Spiral Development Review indicated that the ship design maturity level would not be adequate to utilize as a basis for a competition until completion of the Critical Design Review, currently scheduled for July 2005. This would result in over a year delay in awarding the lead ship contract when factoring in the time required to issue a solicitation and conduct a competition. The delay would have significant negative impact on the surface combatant shipbuilding industrial base and the Navy's ability to compete in the future.

Mr. TAYLOR. In what ways could this lack of competition for a total of seven ships increase the cost of the program? What incentives does a shipyard have to reduce costs when it is virtually guaranteed workload?

Secretary YOUNG. The Navy intends to contract with the DD(X) Design Agent as the single source for Phase IV detail design and integration efforts using a CPAF contract type. The Award Fee will incentivize timely performance, involvement of the National Team, and quality of the design. The ship construction contracts will be allocated equally between NGSS and BIW for the first six ships and will be Cost Plus Incentive Fee (CPIF) type contracts-they will not be awarded as a single contract at the outset of Phase IV. Aggressive sharelines will be utilized to incentivize

cost control and performance incentives will be used to control rates and meet ship construction milestone dates.

Mr. TAYLOR. Is the sole source strategy potentially a recognition that the schedule (FY2007) for the construction of ships two and three, is too aggressive and the Navy will not have sufficient design and development requirements available for the issuance of a request for proposal?

Secretary YOUNG. No. The Phase IV acquisition strategy is a recognition that there is only one responsible source that can satisfy agency requirements for the detail design and system integration effort. The Navy's intention is to contract with the DD(X) Design Agent (Northrop Grumman Ship Systems (NGSS)) as the single source for detail design and system integration efforts using a Cost Plus Award Fee contract. The Award Fee will incentivize timely performance, involvement of the National Team, and quality of design. The acquisition strategy is intended to maintain total ship engineering and design integrity, enable DD(X) schedule objectives to be met, and protect the viability of the surface combatant ship building industrial base. Analysis conducted by the Navy in conjunction with its Phase III Spiral Development Review indicated that the ship design maturity level would not be adequate to utilize as a basis for a competition until the Critical Design Review, currently scheduled for July 2005. This would result in over a year delay in awarding the lead ship contract when factoring in the time required to issue a solicitation and conduct a competition. The delay would have significant negative impact on the surface combatant shipbuilding industrial base and delay introduction of DD(X).

Mr. TAYLOR. Has the Detail Design of DD(X) been completed? If not, when do you anticipate this milestone to occur?

Secretary YOUNG. The DD(X) Design Agent is currently executing the Phase III Preliminary Design contract, which will culminate in Milestone B in the second quarter of FY 2005. The DD(X) Detail Design and Construction contract will be awarded in the second quarter of FY 2005, following a successful milestone B decision. Detail Design would begin immediately following contract award, with lead ship fabrication starting approximately two years later.

Mr. TAYLOR. In addition to the extreme concurrency of technology integration onto the DD(X), there appears in most instances to be no "off ramp" options should the technology not materialize as scheduled. This is not the case with the CVN-21, which has both decision points and strategies for low-risk technology alternatives built into its schedule. Why are "off ramps" and low-risk technology options included for CVN-21 but not the DD(X)?

Secretary YOUNG. The ability of DD(X) to deliver revolutionary capabilities to the fleet with reduced crew necessitates some element of development and production risk. However, the DD(X) program does have alternative options in the EDM development schedule. The spiral development approach adopted by DD(X), combined with robust testing of the 10 EDMs (see chart below for testing and back-up alternatives), will mitigate that risk.

EDM	Alternative Technology or Testing
Advanced Gun System (AGS)/Long Range Land Attack Projectile (LRLAP)	— Gun and magazine land based tests (FY 2005) — LRLAP flight tests (FY 2005)
Autonomic Fire Suppression System (AFSS)	— Weapons effect testing complete aboard Ex-CARON and Ex-PETERSON — Extensive testing aboard Ex-SHADWELL (FY 2003-FY 2005)
Integrated Power System (IPS)	— Advanced Induction Motor (AIM) is back-up for Permanent Magnet Motor (PMM) — Robust land based testing with dynamic loading (FY 2005)
Dual Band Radar (DBR) (composed of Multi-Function Radar (MFR) and Volume Search Radar (VSR))	— MFR land based testing commenced FY 2004 — MFR at-sea testing (FY 2006)
Peripheral Vertical Launch System	— Quasi-static pressure test completed (FY 2003) — Extensive land based testing (FY 2005)
Total Ship Computing Environment (TSCE)	— TSCE infrastructure released for integration (FY 2003)

EDM	Alternative Technology or Testing
Hull Form	<ul style="list-style-type: none"> — Semi-wave piercing tumble home hull is back-up for wave piercing tumble home hull — Tow tank testing (FY 2004/FY 2005) — Sea keeping basin testing (FY 2003-FY 2005)
Integrated Undersea Warfare (IUSW)	<ul style="list-style-type: none"> — Automation testing at-sea (FY 2005) — HF array testing at-sea (FY 2005)
Infrared Mockups	— Land based and at-sea testing (FY 2003/FY 2005)
Integrated Composite Deckhouse and Apertures	— Integrated land based testing (FY 2005)

At ship installation in 2008-2009, the critical milestone for technology maturation in a shipbuilding program per DoD 5000.2 instruction, all DD(X) systems will be at an appropriate maturity level. Furthermore, the DD(X) program employs design budgeting to enable incorporation of specific changes prior to the Critical Design Review (CDR) scheduled for July 2005 without significant impact to the baseline design.

In addition, the DD(X) program has identified low risk technology options for two of the most critical EDMs. The Advanced Induction Motor (AIM) is the back-up system for the Permanent Magnet Motor. AIM testing conducted by the United Kingdom on the Type 45 Frigate will fully develop the system prior to when the system would be installed on DD(X), if necessary. Also, the Navy has maintained a second hull design through PDR, as an alternative to the wave piercing tumblehome hull.

Mr. TAYLOR. If current technology development plans for any of the engineering development models do not proceed as planned, what will be the impact on the progress of system design and detailed design and construction?

Secretary YOUNG. At ship installation in 2008-2009, the critical milestone for technology maturation in a shipbuilding program per DoD 5000.2 instruction, all DD(X) systems will be at an appropriate maturity level. In order to ensure readiness, the Navy has applied a rigorous risk management approach involving extensive testing and technology offramps where appropriate. Furthermore, the DD(X) program employs design budgeting to provide for incorporation of enabling design decisions prior to the Critical Design Review (CDR) scheduled for July 2005 without significant impact to the baseline design.

Mr. TAYLOR. With respect to the Advanced Gun System (AGS) that is being designed for the DD(X), what is the basis for its range and rate of fire requirements?

Secretary YOUNG. The Marine Corps naval fires requirements are articulated in a letter from the Marine Corps Combat Development Command to the Navy. In the letter, fires needs are laid out in near-term, mid-term and initial far-term goals. Navy development of 5"/62 gun technology aboard current ARLEIGH BURKE Class destroyers with Extended Range Munitions fills near-term needs. DD(X), with the 155MM Advanced Gun System (AGS), fills mid-term and initial far-term goals. The 155mm AGS, with "fully automated" ammunition handling system and a family of munitions/propelling charges, will achieve ranges of up to 100 nautical miles. With AGS, DD(X) will have the ability to deploy a high volume of affordable, precision guided munitions with significantly improved ranges, accuracy, volume, firing rates and response times in support of NSFS requirements. DD(X) also provides the potential for growth to far-term objectives associated with Rail Gun technology.

Mr. TAYLOR. The AGS is to have a completely automated loading mechanism. Has the Navy employed such a system on any other ship?

Secretary YOUNG. No. The AGS automated magazine represents a significant advance in naval gun evolution. The automated magazine will enable firing rates in support of US Marine Corps requirements and significantly reduce maintenance requirements due to the elimination of hydraulics from the design. In addition, operation of the automated magazine will not require human involvement, thus supporting the DD(X) optimized manning requirement.

Mr. TAYLOR. Does the Navy have a reliable cost estimate for the DD(X) program? If so, what is the estimate?

Secretary YOUNG. The Navy has developed a program manager's estimate, which is reflected in the FY05 President's budget. The Naval Sea Systems Command's independent cost organization (SEA017) is in the process of validating the program manager's estimate. Subsequently, the OSD Cost Analysis Improvement Group (CAIG) will conduct their own independent cost estimate in preparation for the Milestone B decision scheduled for the second quarter of FY 2005.

Mr. TAYLOR. Has a final decision been made regarding hullform design?

Secretary YOUNG. The program completed the DD(X) Hullform EDM Preliminary Design Review (PDR) April 23, 2004. Numeric predictions indicate that the wave piercing tumblehome hull will meet ship stability criteria and stealth requirements.

Mr. TAYLOR. Last year the Navy testified that the design and capabilities of the first Flight DD(X) would be "solid" before construction begins on the first ship. Is this still an accurate statement?

Secretary YOUNG. Yes. The design and capabilities of the DD(X) lead ship will be solid before construction begins in FY 2007. The DD(X) Operational Requirements Document (ORD), approved February 23, 2004, confirmed desired capabilities for the class and established key performance parameters.

With regard to design progress, DD(X) will achieve the level of design maturity necessary to receive Milestone B approval in the second quarter of FY 2005 and proceed to award of the lead ship detail design and construction contract. Detail Design would begin immediately following contract award, with lead ship start fabrication beginning approximately two years later.

Mr. TAYLOR. Last year the Navy testified that the engineering data package that supports the first ship construction is the same engineering data package that supports the construction of the second ship. Is this still an accurate statement? If so, what is the advantage to funding the lead ship in RDT&E vice SCN?

Secretary YOUNG. Yes. The engineering data package that supports the DD(X) lead ship will also support the construction of the second ship. The advantage of funding the first DD(X) with RDT&E is that, historically, the lead ship of a Class experiences maturing of the initial specifications from lessons learned during detail design to the end of construction. Although possessing the same engineering data package for common technology and capability, construction of the second ship will benefit from incorporation of lessons learned into the design package for the second ship, facilitated by the flexibility afforded by RDT&E funding of the first ship.

Mr. TAYLOR. The Committee understands that the schedule for detailed design has been re-scheduled from September of 2005 to March 2005. Is this true? If so, how does it impact the schedule for Milestone B, Critical Design Review, and lead ship construction?

Secretary YOUNG. Yes. DD(X) detail design, previously scheduled to begin in the fourth quarter of FY 2005, was accelerated to begin in the second quarter of FY 2005. The change reflects the Navy's decision to contract with the DD(X) design agent as the single source for Phase IV detail design and integration efforts, which precludes the need to wait to award the Phase IV contract until the ship design reaches Critical Design Review (CDR) level maturity six months later.

The decision to accelerate DD(X) detail design did not impact Milestone B, which has been scheduled to occur in the second quarter of FY 2005 since the restructuring of DD 21 to DD(X) in November 2001. Nor has the acceleration of detail design altered the CDR completion date of the fourth quarter of FY 2005, which has also been the same since the restructure. Lead ship construction or start of fabrication, also remains stable for the third quarter of FY 2007 - the date originally established at the outset of the DD(X) program.

Mr. TAYLOR. The Committee understands that the Navy is pursuing rail gun technology for the "second flight" of DD(X). What is the schedule for initiating the second flight?

Secretary YOUNG. There is currently no specific schedule for the second flight of DD(X). Future flights and the technology insertion plan for DD(X) are being discussed as part of the FY 2006 budget development process.

Mr. TAYLOR. What is the basis of the requirement for a rail gun?

Secretary YOUNG. The analysis of this requirement is ongoing.

Mr. TAYLOR. Has the requirement been approved by the JROC?

Secretary YOUNG. No. This is still a technology effort.

Mr. TAYLOR. Is this technology sufficiently advanced to meet the second flight?

Secretary YOUNG. The Office of Naval Research (ONR) is executing a six year electromagnetic (EM) Launch technology development and demonstration effort. This program is tackling several of the high risk challenges listed below.

- Railgun durability is of concern due to desired firing rate and shot capacity prior to barrel replacement. Naval indirect fires will be driven by bore straightness, not only at the first shot, but perhaps as far as the eight-thousandth (8,000) shot. Modest technical progress has been made through funded lab research in resolving these issues, however, these solutions have not yet been demonstrated at full-scale and at currents applicable to a full scale naval concept. The Navy is currently conducting materials studies in conjunction with Multidiscipline University Research Initiative (MURI) grants to provide improved barrel materials.

- The Navy faces challenges in scaling up components to deliver the 30–70MJ of energy required for each shot and developing guidance and control for accurate long-range KE rounds. The pulsed alternator under the development of the Army Research and Development (R&D) program is a potential candidate, along with capacitors, for the pulsed power network for the naval railgun. The naval railgun application may require active cooling of the pulsed alternator windings to support the sustained firing rates anticipated for their application.
- With respect to launch packages, the primary launch dynamic issue is the integrated launch package (ILP) performance and the interaction with the railgun launcher. The performance of the armature, the sabot, and the projectile as one unit within the barrel is crucial as is the survivability of projectile electronics in the high G/high electromagnetic environment. Aerothermal heating, effective and survivable guidance and control, and warhead lethality issues will be crucial to determine feasibility of an EM weapon system for long range indirect fire support. However, the ONR program will not adequately address the most challenging technical hurdles associated with the integrated launch package. Mass and volume constraints, launch survivability, guidance and control, thermal management, and lethality effects of the ILP are technical areas where the Navy program will require assistance.

Mr. TAYLOR. Is it technologically feasible to move it onto the DD(X) ?

Secretary YOUNG. In concept, the Navy should be able to transition this technology to DD(X). A conceptual study was conducted under the DD(X) design agent contract to explore the feasibility of installing the railgun system in DD(X). The conceptual study concluded that the notional naval railgun system would fit into the volume and weight allocations for the Advanced Gun System scheduled for installation on DD(X). Additionally, the conceptual study concluded that the Integrated Power System could accommodate the high power demands of the naval railgun system. Further detailed studies are required to investigate the ship integration impacts, warfighting advantages and life cycle cost estimates.

Mr. TAYLOR. What is the estimated time and cost to develop this capability?

Secretary YOUNG. The Navy is interested in developing electromagnetic (EM) launch, or railgun, for very long-range ship-to-shore indirect fire support, including fires from DD(X). Navy technology efforts are focused on EM technology development toward naval surface fire support applications where gains in response time, range and magazine capacity provide new capabilities desired under the Naval Sea Power 21 objectives.

The technology program currently under way plans to mitigate risks by overcoming known technical challenges in a collaborative environment. This will help minimize duplication of effort, develop common components where feasible, and exploit existing facilities and technical expertise. The estimated time and cost to develop this capability is being developed in a collaborative, multiservice environment to support the National Defense Authorization Act for Fiscal Year 2004, PL108–136, Section 211 which directs the Secretary of Defense to establish and carry out a collaborative program for evaluation and demonstration of advanced technologies and concepts for gun systems that use electromagnetic propulsion for direct and indirect fire applications.

Mr. TAYLOR. Is any portion of this estimate included in the fiscal year 2004 or 2005 budgets?

Admiral NATHMAN. Yes, FY 2004 and 2005 rail gun funding is depicted in the table below.

Organization	PE(s)	FY04	FY05
Navy	601103N	\$1.2M	\$2.0M
	602114N	\$8.0M	
	063123N		\$14.3M
Total Navy		\$9.2M	\$16.3M

Mr. TAYLOR. In order to test this rail gun, the Navy would require a new facility. What is the estimated cost of this new facility and is it included in the fiscal year 2004 or 2005 budgets?

Secretary YOUNG. An estimate for the new facility to be built at NSWC Dahlgren is \$10M. A DD 1391 MILCON request has been proposed and submitted for consideration to build an Electromagnetic Launch RDT&E facility starting in FY 2007. FY 2004 included \$750K to build the initial Phase I of the Electromagnetic Launch facility. There is no funding in FY 2005 for facility construction.



BOSTON PUBLIC LIBRARY



3 9999 06352 071 0

